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Proposed Seaside Residence, Hunstanton.—Mr. C. F. Skipper, Architect ..... *Double Page Ink-Photo.*
Design for the End of a School Hall.—By Mr. J. W. Newman ..... *Double Page Ink-Photo.*
Church, S. François de Sales, S. Trond, Belgium.—Drawn by Mr. J. Martin Brooks, A.R.I.B.A. ..... *Single Page Photo-Litho.*
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Students' Designs at the Institute.

THERE has been an unusually large competition this year for most of the prizes offered by the Institute to architectural students. For the Soane medallion there are twenty-two competitors; for the Tite prize twenty-six; for the Grissell medal, not usually a popular prize, and generally not drawing more than half a dozen competitors, there are eighteen; and even the Essay prize, for which a single competitor has not infrequently had a walk over, has this year induced three gentlemen to express their opinions at length on the interesting question of "The Comparative Desirability of Formal or Irregular Treatment of Street Architecture in Large Cities." We do not know whether there is any special cause for it, but there certainly seems to have been a kind of awakening among the student ranks this year. This is gratifying in itself; and what is more gratifying is that the great increase is in the competitions in design (the Soane, the Tite, and Grissell prizes), in contradistinction to those which are for mere drawing; and this seems to indicate that our young architects are beginning to recognise that architecture really means design and not drawing, however charming and improving a pursuit is architectural sketching in itself.

When we turn from the question of quantity to that of quality, the result is not so satisfactory, more especially in regard to the Soane medallion. This we regard as the most important and valuable of all the Institute prizes, since it is the only one which is concerned with the complete design and planning of an important building, as it might be carried out in actual practice. The Tite prize might be given for a similar class of work, but the subject set for this prize has generally been (as it is this year) rather more of the character of ornamental architecture, and rightly so, as the special object of the prize was the study of Italian architecture, or of a type of architecture coming within that definition, as a matter of style. But the Soane medallion is for architecture in the fuller and complete sense of the word—the working out of a building in the practical as well as the artistic sense; if indeed plan ought not to be considered as an essential part of the artistic design. And in this sense we fear it cannot be said that the results of the competition rise to the occasion. So far as the exterior treatment is concerned there are not many which can really be called good designs, and the most satisfactory in this sense are in almost every case marred by serious defects of planning. On the other hand there are some good plans which are accompanied by bad exterior designs. There is no single *envoi* which rises to the height of the occasion, or which equals some of the productions which conferred honour on competitors of bygone days.

The subject is "A Club-House in a Large City"; a very good subject, attractive (obviously) and not too difficult in respect of technical requirements. It may be useful if we take the competition as the occasion for a few words in regard to the architectural requirements and treatment of a club-house. As far as architectural character is concerned, it should be borne in mind that a club is to a certain extent a domestic building, a building for daily life, and one which should therefore have both the appearance and the reality of comfort; but it expresses daily life deprived of its character of *intimité* and individuality; the home not of one family but of a number of individuals unconnected together by any family tie. It therefore naturally assumes a larger and more stately air than should belong to any private house except what is admittedly a mansion of State. Bridgewater House, which is a private mansion, has in fact all the characteristics of club architecture externally, but this is a residence of exceptional size and stateliness. As a club on a large scale is an appanage of the wealthier class, it may rightly express this in the sumptuous character of its architectural treatment, but at the same time it should avoid assuming anything of the appearance proper to a public building, or which may lead to its being mistaken for one. Such features therefore as a large dome, or a tower of any kind, are out of place and give a false impression of the object of the building; unless perhaps in the case of a yachting club at the seaside, when a small tower may be appropriate as a place for a lookout to seaward. Nor, though there may be dignity, should there be anything like display or self-assertion; that is at variance with its character as a gentleman's house. The Reform Club, though it may be thought to err on the side of quietness and simplicity (externally), has much more of the proper club character than the Carlton, with its display of polished granite columns and pilasters. Generally speaking, the employment of a large "order" on the façade of a club is out of place, apart from general grounds of architectural criticism (which might condemn such a treatment in any building), as at variance with the semi-domestic character of a club; the Junior Naval and Military Club, in Piccadilly, for instance, looks a good deal too much like a Bank. A good many of the well-known Pall Mall clubs, although the architecture of some of them may not be worth very much considered in detail, represent the general ideal of club architecture exceedingly well. The United Service, the Athenæum, the Travellers', the Reform, the Army and Navy, and the Oxford and Cambridge, all have the proper club expression of dignity without showiness, and preserving something of the "house" character; perhaps the sculptured panels in the last-named give a little too much the suggestion of an Athenæum or public library. The New University Club, in St. James's-street, is also, in another style, a building with the semi-domestic character of a club, while the front of the Royal Societies Club in the same street, with its large plate-glass windows in the ground story, suggests the idea of an "emporium" with a showroom on the ground floor. Some large recent clubs, such as the National Liberal and National Constitutional, produce too much the impression of hotels; it is not very easy to say why, but they certainly have that *genre* about them. In regard to detail, a club building cannot be too refined and carefully considered; it should express the acme of refinement and good taste. We may add that the American architects seem to understand club architecture exceedingly well; a good many designs for buildings of this class which have been illustrated from time to time in the American professional journals are

perfectly admirable examples of what club architecture should be.

In the interior a club requires a pretty large hall and staircase, both for reasons of dignity and because there must be plenty of space for a large number of members to move about without being in each other's way. As far as architectural character is concerned there is no necessity for a great central staircase hall lighted from above; it may even be argued that there is a little too much of the public building character in this; but on the other hand it is the easiest way of securing light to the hall; the difficulty of adequate lighting otherwise is only too well exemplified in a good many of the Soane competition designs. Generally speaking a club is a tolerably easy kind of building to plan, as there is usually plenty of space, and the principal apartments are a few large rooms which present no difficulty in arrangement. Among the small mistakes of the Soane competitors, however, are that of providing only one door at the corner for entering a room 100 ft. long, and that of one competitor, "Thistle," in lighting one of the main front rooms with windows on opposite sides, an arrangement destructive both of comfort and (in a room next the street) of privacy, as passers-by can look right through it. The two little difficulties in the planning of the principal rooms occur in connexion with the billiard-room and with the strangers' department. For convenience of access, the billiard-room should be near the dining-room; for convenience of playing, in the daytime (and club billiard-rooms are often much used in the daytime), it should be lighted from the ceiling, which can often only be managed by putting it on the upper floor. In an American club this would not matter, as there would certainly be a lift; but in English clubs lifts are not favoured, being tacitly supposed to be out of place in a club. Billiards can, however, be satisfactorily played with a side-light, but it must be an ample and a suitable light; points on which some of the Soane competitors seem to be quite at sea. "City" shows his billiard-rooms on the ground floor with a south light, which in summer is out of the question; a player opposite the windows would have the sun in his eyes, and pulling down the blinds would not leave enough light; the aspect must be north or east. Another competitor shows a basement billiard-room with one small window in the corner, which is of course absurd except on the supposition that artificial light is used all day—a possible but most undesirable expedient. The best resource is to place the billiard-room in a portion of the principal floor which need not be carried up, and give it a ceiling light. The Strangers' department offers another problem. Your clubman is rather jealous of strangers, and does not wish them to penetrate beyond their allotted precincts, or to be too much in evidence in any way. It is therefore certainly a mistake for "Rime" to have made his strangers' dining-room only accessible through the club dining-room, and for he and others to have placed the strangers' smoking-room at almost the greatest possible distance from their dining-room; and it is equally a mistake on the part of "Hiawatha" to have given the strangers' smoking-room and cardroom the central and architecturally emphasised entrance from the first-floor hall. The prominent and central entrances should be for members. "Grex" has had a good idea in placing the strangers' rooms *en suite* on the ground floor, the similar rooms for members forming a suite on the first floor over them. The only objection is that the door of the strangers' dining-room is the central one in the entrance-hall facing the entrance; but it may be replied that upstairs is the principal floor, and that the position of the strangers' rooms on the ground floor prevents their penetrating into the members' territory—"Thus far shalt thou go and no farther."

The most original of the more meritorious designs (there are some that are original without being meritorious) is that signed "Ars," who has treated the front in a slightly concave line on plan, with a circular vestibule and cupola projecting in the centre of it; the arrangement is rather odd, but would be susceptible of effective treatment. The plan of the main hall and the coffee-room to which it leads up is the only thing in the whole set of designs which rises to the level of a really fine architectural conception. He has found the upstairs lobbies difficult to manage, and the small bracketed-out gallery forming the only communication across the stairs is a very weak point. Both the library and the private dining-room would be deficient in light, the library especially; a library requires a good light all through, and a window at each end of this long room would leave the centre portion without light enough to see the books properly. This, however, is a very meritorious plan, and the conception of the design is good, but it is spoiled in the perspective by weak or ragged handling. "Hiawatha," which we have already referred to, is one of the best efforts; the Classic front with an order is shown in rather a scraggy line drawing, but would work out well with good detail, and the plan has much merit. This and "Ars" are the two best taken all round.

We may add a few brief remarks on some of the others. "City" shows a sensible quiet elevation, which looks like a club, but the built-out corbels under the balcony are clumsy in appearance; the plan has some good points. "Fordinbridge" has a darkly-tinted perspective showing a rather good façade, though the centre and wings hardly seem to harmonise; the rooms are too small and there are other faults in plan. "Post Fanum Vacunæ" shows a centre garden-court lighting the corridors, and the arrangement of the south range of rooms is very good; but the secretary's room and committee-room would practically have no light at all. "Rime" shows a very simple elevation in good taste, but much too naïve for a club. "Ionic" has gone in for winning the competition by dint of drawing; his perspective is much the finest drawing in the room, but there is little in the architectural idea apart from the drawing, and the plan is hopeless, as the main hall and nearly all the corridors are totally devoid of proper lighting: no one could live in such a building. "Elsa" shows a very pretty little perspective view of an Italian façade, unfortunately associated with a plan which is quite puerile. "Ace of Clubs" has one of the best plans in a practical sense, the rooms mostly well arranged and considerable care taken about lighting the corridors; the defect is that it is a merely practical plan, with no sense of interior effect, and the façade is clumsy in detail, especially the treatment of the porch. We have already referred to a good point in the plan of "Grex," and may add that the elevation is graceful and pleasing.

The Tite competition, for "An Entrance Gateway to a Public Park," shows a better general average than the Soane; of course it is an easier subject, as there are no difficulties of planning to consider. It should be remembered that it was founded for the promotion of the study of "Italian architecture," and that in Tite's day and in his intention this meant Italian Renaissance. Such a design as "Le Nord," therefore, does not come under the definition, and should not have been accepted; and in any case it is bad as a conception, for it is, one may say, an absolute essential that a park entrance gate and screen should be symmetrical on each side of the roadway; it is an absurdity otherwise. Of course, in regarding the competition as restricted to Italian Renaissance, we are not denying that there may be attempts to develop that style in a greater or less degree in regard to treatment of detail. This has been recognised by the author of "St. George," undoubtedly the best design submitted, though shown in slighter and less finished drawings than many others. He treats the gateway simply as a gateway—a block with three archways, the centre raised a little, and sculpture decoration well introduced as a finish. The gate is led up to by Ionic colonnades on each side in a concave line, and terminating in outpost blocks which harmonise with and partly repeat the design of the gateway block. The ironwork of the gates and the grilles in the colonnade are charmingly designed; original and new in treatment, and yet quite in harmony with the masonry design. The one weak point is that the entablature of the colonnades returns on itself to stop against the sides of the flanking blocks, thus showing a weak angle at the end; it ought to have stopped *against* them at the back. But as a whole this design shows the feeling of an artist. The next best to this, perhaps, is one in rather the same manner but making larger use of sculpture—that signed "Lion"; a very good composition, except that the rather heavy block with sculpture accessories seems wrongly placed over the columned opening in the wing-walls.

There are some other good designs; the prevalent mistake is in trying to do too much. A gate composition of this kind should be simple and restrained as a whole, however richly ornamented. Thus, in "Nocturne," the perspective view of which is pretty, the lower erections forming entrances to the terrace are out of scale with the rest and detract from the effect; it may be added that the octagonal turrets to the centre block, rising from behind the colonnades, do not seem to harmonise with the rest of the composition. In "San Gallo" the dome comes much too abruptly on the top of that large arch, and it may be questioned whether a dome is in place at all. A gate is a gate, not a building. "Marble Arch" has merits, though the cupolas at the sides, graceful in themselves, do not seem quite to belong to the main composition. "The Bard" is a design of some power, with a mass of rustication on the centre block, obelisk finials, and

flanked by a large concave double arcade. It may be a question whether the cupola on the top should be rusticated, above the plain attic. "Englishman," a tawdry affair, is we trust wrongly named. "Pencil" is a rather weak design as a whole; it is too flat and thin, but the author shows a very good detail drawing. So does "Fiori," whose design is however much too complicated, and the general perspective drawn in a detestable style.

The Grissell medal is properly given for construction, and should be so regarded; in the present instance the subject, "A Wooden Bridge," has tempted several competitors into bedizening their construction with gim-crack ornament which ought to be enough to disqualify any competitor. Fortunately the best constructed, "Kopper-nob" and "Draughtsman," are also the least pretentions in this sense. "Trabs" treats his bridge railing well with a certain amount of simple character.

The Pugin drawings contain a great many good sketches and drawings, but we should be inclined to say that the set which are most germane to the objects of the studentship are the comparatively small but numerous and excellently handled pencil sketches by Mr. H. W. Cotman. The Owen Jones drawings are also a good collection, among which those of Mr. McLachlan seem to combine the most varied quality of work, including both geometrical drawing and good water-colour views of buildings.

We have seen some finer sets of measured drawings than any of the six sets submitted this year for the Silver Medal; but they make a good show, and include some interesting buildings—St. John's, Westminster; Burghley House; St. Magnus; the Exeter Guildhall, &c. The drawings of the latter, signed "Semper Fidelis," are the neatest in finish, but do not contain so much work as some of the others. St. John's, Westminster ("Archer"), is a large and complete set of drawings; the perspective is weak, but as this is a prize for measured drawings the perspective is merely an extra which need not be considered.

In each of the three sets of drawings,—the Pugin, Owen Jones, and Silver Medal, the adjudicators will have had some difficulty in deciding on the award. We cannot but regret that architectural design, especially as regards plan, does not seem to make more progress.

NOTES ON THE RIVIERA.

AMONG the features of the new century must certainly be numbered the growth of the towns of the French and Italian Riviera. To many English people the places which stud the northern shores of the Mediterranean are as familiar as, and often more so than, the cities of their own country. And for one reason this is not surprising; for whether we take the towns of the French Riviera—Cannes, Nice, Monte Carlo, and Mentone, or those of the Italian Riviera—Bordighera, San Remo, and others almost to Genoa, nothing is more noticeable in their development than the study which is given to physical comfort. If we compare the ordinary English hotel with those of the Riviera it will be seen that in England we have been standing still. Long ago sanitary arrangements were superior in England to those in any other part of the world; now it is pretty certain that many foreign hotels are, taking them one with another, better equipped in this respect than those of England, except where the charges of the latter are very costly. Nowhere has the necessity of good sanitation been more carefully kept in sight than on the Riviera. One result is that the sanitary state of all European hotels is thereby improved, since hotel proprietors, who are amazingly cosmopolitan, recognise that the English visitors demand good sanitation, well-ventilated and well-warmed rooms. The odd part of this is that English men and women put up in their own country with accommodation which they would not for a moment endure on the Riviera. A review, indeed, of the hotels at the towns already named would show in the last decade an extraordinary development in the art of public entertainment for profit. We say "art," because there exists something in the nature of an art in building and equipping houses for the stay of strangers.

On the Riviera the main object of architects is to make the most of the sun and to avoid the wind. Aspect is everything, and a house placed in a right aspect must be constructed so as to take all possible advantage of the sun, even though in January it shines day by day as we sometimes find it in England in ideal midsummer weather. It may be doubted whether, in a sunless country such as England, architects study the question of utilising the sun as much as they should do. It may be that we are so accustomed to be without it that we defiantly determine to build without regard to it. But certainly it is interesting and important to observe how those who have had to advise on the construction of the more modern hotels on the Riviera have designed the buildings to capture the sun. Thus the dining-room of the Riviera Palace at Mentone has at the southern end an enormous bow, the breadth of the room, almost wholly glass; by this nearly the whole room is flooded with sunshine. Again, the hall is constructed so as to form a place for sitting, reading, or writing, the entire length having a window looking due south. The arrangements are simple, but this same simplicity is the more effective, for it successfully achieves an important purpose. The more modern hotels are also beginning to be planned with balconies, one of the most important points for obtaining sun and air to the full. The still incomplete building at Monte Carlo adjoining the Balmoral Palace Hotel, and facing to the west and so towards Monaco and its warm and quaint palace, is the best example on the Riviera of the appreciation not only of the utility but the picturesqueness of the balcony. This building may be a little too ornate, but it harmonises thoroughly with the glow and colour of the Mediterranean shore. Of the private villas on the Riviera as much has not yet been made as is possible; but the richness and beauty of the vegetation with which they are surrounded—the palms and the delicate mimosa, the formal but brilliant orange-trees—almost render simple white buildings the most effective.

We have dwelt upon some of the architectural features which distinguish what may be called the northern colonisation of the Riviera. But the astonishing growth of these towns in the last quarter of the century which has just ended must be regarded as a noticeable social phenomenon. Opposite that singular collection of buildings which forms the town and Palace of Monaco has arisen a group of buildings of the most luxurious and complete description, ornate in character and full of comfort. The contrast of the small mediæval Italian principality with the modern city is remarkable—the past and the present stand side by side. Still more so, though in different forms, is this contrast noticeable at Mentone. Under the shelter of the rock on which the old cemetery stands are the clustered red-roofed houses of the ancient town of Mentone, half port, half fishing village, for two centuries under the rule of the Grimaldis, Princes of Monaco, and then for sixteen years, from 1848, a free town under the protection of the kingdom of Sardinia. On either hand villas and hotels and modern dwelling-houses have sprung up, from the Pont St. Louis on the east to Cap Martin on the west. But there in their midst is the quaint, crowded, ill-smelling relic of mediævalism, once a free town, reminding us how historically inaccurate it is to speak of this stretch of Mediterranean coast as the French Riviera. Still greater is the contrast between Mentone and Castellare, perched on its heights, surrounded by the silver olive-groves which cover the precipitous sides of the valleys of Mentone and Carrei. From the little "Place," to which alleys called streets lead, can be seen glimpses of the modern buildings of the Mentone of to-day, while in the squalid village, wanting indeed its walls, is visible—little changed—the fortified town of the Lascaris, Counts of Ventimiglia.

The contrast also between Nature and what perhaps for convenience may be called civilisation is more marked on the Riviera than almost anywhere else in the world. On a rocky point washed by the waves there suddenly, as it were, appears a great house of bright white stone, not wanting often in an opulent beauty. These intermediate hotels are springing up all along the Riviera. At the end of the rocky pine-clad gorge of La Turbie stands, for example, the Hotel Eden; on the sunny but sometimes wind-swept point of Cap Martin, among the brushwood and firs, there is an equally striking structure. The little promontory is utilised in a manner which is only to be found in the Riviera, since it is not mere ordinary comfort and four common walls which are placed on what was once a desolate rock, but a building such as one associates with the Boulevards of Paris. And the size and ornamentation of these white stone buildings is not disagreeable; on the contrary, they seem to harmonise with the expanse of light, the colouring of sea and mountain in which they stand. Whether from the commercial point of view this building of expensive structures may not be going on too fast one may perhaps doubt, but the energy and taste which are shown in these buildings can nowhere be surpassed.

As has already been pointed out, this remarkable change has occurred during the last quarter of the century. It is not a change caused by the development of the native population, by the growth of native industries as in the United States, but by an invasion, so to say, of Northern multitudes; for when we survey the coast-line from Toulon to Genoa, and bear in

mind that along the whole of it there are hundreds of strangers during the winter collected like swallows from all parts of Europe and of America, we must recognise that we are in the presence of a phenomenon that should be noted. Technically this development of villa and hotel is of much interest to those connected in any way with buildings, but it should be regarded also from a broader standpoint, and as enabling us to contrast the mediæval town and village with the buildings of to-day. It is a development produced, as has been pointed out, wholly by external means, and as communication between North and South becomes more easy and convenient, this modern tendency to seek the sun must become stronger and more popular. Nor can it fail to have influences on English buildings and English habits. The climate of much of the south coast of England, though it never can be as dry and sunny as that of France and Italy, yet can give a sufficiency of sunshine for many. Yet how little is done to utilise its precious warmth, or to make, as on the Riviera, houses equable in temperature whether the sun be shining or not! It is not only continuous and brilliant sunshine, but the higher average of comfort and warmth which makes so many seek the shores of the Mediterranean, which in the future must unquestionably witness a far greater development of structures of every kind for the use of the stranger from the North.

NOTES.

The London County Council Water Bill.

SOME controversy has recently been taking place in regard to the promotion in the approaching session of Parliament of the London County Council Fifth Water Bill. It has been said that it is wasting the ratepayers' money when it is obvious that this measure will not be supported—indeed, will be opposed—by Government. The Council is, however, acting in what may be called a constitutional, and also in a businesslike manner. It is the representative of the ratepayers; and the majority of the ratepayers of London, as shown by the character of the Council, are in favour of the purchase of the undertakings of the water companies. Therefore the Council must fulfil its mandate, and endeavour to carry it to a practical conclusion. Apart, however, from that view of the subject, it is obvious that unless the Council presses this matter on the attention of Parliament the Government will make no serious attempt to grapple with it. The last effort, two sessions ago, was a lamentable failure, and it needs pressure from London to obtain any measure whatever. The singular thing is that the Government should interfere in this matter at all. Birmingham, Liverpool, all the large provincial towns, are allowed to carry out their own municipal policy. One reason why London ratepayers are so apathetic is because the Metropolis is watched, and in a sense directed, by the Government of the day, instead of being allowed to work out its own salvation in strictly municipal matters.

Architectural Discoveries at Thermon.

THERMON, in Ætolia, is little more than a day's journey from Athens, and yet until the recent excavations it was practically as unknown as though it were in another hemisphere. In the days of Polybius it was the religious and political centre of the Ætolian confederation. The excavations have laid bare not a town but, as in the analogous case of Olympia, a sacred enclosure, an Altis. The greater part of the remains discovered, both architectural and epigraphical, are of the third and second century B.C., but one building, the ancient temple of Apollo Thermon, is of a date long anterior. This temple is of the Doric order; it is peripteral, with a colonnade of five by fifteen columns; it has an opisthodomos, but apparently no pronaos. It was destroyed about 218 B.C. by fire; and, of course, the new structure was in stone, but the bases extant show to the eye of the expert that they once supported columns in wood; they closely resemble the bases of the palace at Tiryns. In fact, the temple was of the primitive order of structure, *i.e.*, a compound of wood and terra-cotta. Great interest attaches to the remarkable terra-cotta remains, which have been found in large quantities. They consist of:—1. Antifixæ of the frontal roof tiles (ἡγεμόνες κεραμίδες). 2. Painted metopes. The antifixæ are heads of men, women, and Sileni—archaic for the most part, a few of the early fifth century B.C. They are brilliantly coloured. The metopes are decorated with mythological subjects, some inscribed. So far it has been possible to restore an archaic Gorgon, a Perseus taking flight, holding the head of Medusa, three seated divinities, and a huntsman with his prey. The temple presumably belongs to the fifth century B.C.

Views of London in the Eighteenth Century.

A NOTABLE collection of paintings was dispersed at Christie's auction-rooms on Saturday in last week. The pictures, twenty-one in number, of large size, and well preserved, comprised paintings ascribed to Canaletto, Samuel Scott, E. Dayes, T. Malton, J. Boydell, J. B. Chatelaine, and J. Farington. Some of them are finely executed, and many illustrate views that have been but rarely represented. Amongst the latter kind are the seven by (or after) J. Boydell, showing the Tower as seen from the Thames, with the Pool, and Tower Wharf shaded with trees—30 in. by 50 in.; Smithfield market-place, with St. Bartholomew's Hospital in the back-ground; Skinner-street and Holborn Hill—a very uncommon subject; and old Chelsea, or rather Battersea, wooden Bridge, with the mill and the church on the river's right bank. The design of the bridge, somewhat similar to that of old Putney Bridge (illustrated in our columns of January 7, 1888), has been attributed to Cheselden, surgeon of the Royal Military Hospital, who, however, died in 1752. The bridge was erected in place of Chelsea ferry, for John First Earl of Spencer, lord of the manor, and fourteen other proprietors, who subscribed 1,500*l.* apiece, in 1771-2, after the designs of Henry Holland (*obiit* 1806), at a cost of about 23,000*l.*, by Phillips, George III.'s carpenter, whose father had also built Putney Bridge. Battersea Bridge was pulled down in the winter 1885-6; of Putney Bridge the collection included a view by E. Dayes. The design of Putney Bridge (1729-1886) has been attributed to Cheselden, to whom the proprietors passed a resolution of thanks on July 2, 1730; and also to Ripley. According to Chasemore's account, 1875, it is due to Sir Jacob Ackworth. The fabric cost 23,075*l.* Another remarkable painting (Canaletto), which it is believed has not been engraved, depicts the Monument and St. Magnus Church, as seen by one looking down Gracechurch-street and Fish-street-hill. A pair, 30 in. by 50 in. (S. Scott), show old London Bridge with St. Magnus and St. Michael Churches, and the river-side between York Water-gate and Blackfriars Bridge. In the view (E. Dayes) of Leicester-fields, we see Saville House, in respect of which we have found in the St. Anne, Soho, rate-books that the Earl of Ailesbury was rated at 3*l.* 12s. in 1693, and Leicester House for which the Earl of Leicester was rated at at 7*l.* 10s. in 1711—and which stood where the Empire Theatre and the adjoining hotel now stand. Bloomsbury-square (E. Dayes) shows the house of Lord Mansfield, at the north end of the east side, which the "No Popery" rioters sacked and burned in June, 1780, with Southampton House (on the north side) built in 1664-5 for Thomas Wriothesley, Earl of Southampton, and demolished in 1800. We may mention, too, the rare view (T. Malton) of Fleet-street with the Church of St. Dunstan to the spectator's right-hand; the garden, as seen from the river, of Denmark House (Canaletto) with the water-stairs, and St. Paul's in the distance; Old Westminster Bridge (J. Farington); and St. James's Palace (Canaletto) with the Gate-house in the foreground, and Pall Mall leading towards the Haymarket and the King's Mews, which Kent rebuilt, beyond. The sale realised nearly 2,300*l.*, the prices ranging from 240 guineas for the last-named picture to 40 guineas for the view of the Tower.

The Sydenham Boiler Explosion.

THE Board of Trade Report on the boiler explosion which occurred in July last at the works of the Crystal Palace Electric Supply Company has now been issued, and it discloses incompetence and neglect which, we hope and believe, are very unusual. The boiler was of the locomotive type, working at a pressure of 140 lbs. per square inch; it was nearly nine years old, and owing to weakness of the fire-box crown, that part was violently blown out, leaving a hole measuring about 6 ft. by 3 ft. 6 in., the explosion killing two, and injuring five, persons. It is stated in the Report that the boiler itself was of faulty construction, but this was not the real or immediate cause of the explosion, which is directly attributed to "the failure to make proper examinations." Several persons are blamed for this neglect. The company did not engage a competent person to examine their boilers in June, 1898, and thereafter; the boiler was not periodically examined by their fitter, who, moreover, was not competent to perform such work; the electrical engineer to the company knew there was deflection in the fire-box, and having been advised by a competent authority that he should test the boiler by hydraulic pressure to 280 lbs. per square inch, he failed to do so. An inspector who examined the boiler on behalf of an insurance company did not perform his work thoroughly, and did not even notice the deflection in the fire-box. In the opinion of the Commissioners the explosion was caused by the neglect of the electrical engineer, and it was contributed to by the neglect of the insurance inspector. We also believe that the boiler was on the point of being replaced

by a new one when the explosion occurred. It seems probable that the directors trusted in the providential preservation of the old boiler until such time as the new one could be installed, and that their cheerful optimism was confirmed by the absence of any strong protest from the electrical engineer. One of the directors stated that "the company had insured only for the sake of being indemnified from loss caused by an explosion," and another director suggested that "insurance was effected for the additional purpose of obtaining regular inspections." The Commissioners state the opinion that the latter reason "was not very present to the minds of the directors." A most culpable condition of negligence certainly appears to have afflicted all those concerned in this disastrous accident.

Another Gas Geyser Fatality.

IN our issue of the 22nd ult. we recorded the death of a lad at Hammersmith caused by the use of a gas geyser in a small bathroom. Another death which is also attributed to the employment of a gas geyser in a bathroom is now reported from Newton-le-Willows. The victim this time is Mr. D. H. Lloyd, the Gas and Water Engineer to the Newton-le-Willows District Council, a gentleman of about thirty-five years of age. He was found dead in the bath early on Sunday morning, the 6th inst. The depth of water in the bath was about 18 in. The geyser employed for heating the bath water was found to be red-hot, and the woodwork in the neighbourhood was on fire. The gas had become ignited at the air inlet, and consequently the gas was burning with a luminous flame inside the mixing tube, and products of incomplete combustion were formed. It appears improbable that the gas became ignited at the air inlet before the deceased became insensible, for any gas engineer would at once detect the odour evolved when gas is burned under these conditions. The evidence showed that death was due partly to syncope and partly to asphyxia, and the jury returned a verdict of "accidental death." Once again we have to recommend the fitting of geysers outside, instead of inside, bathrooms; and where this is impossible, the provision of a flue for carrying away the combustion products and ventilating the room, without regard to any statement from the gasfitter or the vendor of the geyser concerning the needlessness of such flue. If, moreover, the bather would take the precaution to turn off the gas before entering the bath, fatal accidents arising from the use of gas geysers would less frequently occur.

Aluminium.

MR. KERSHAW read a valuable paper on the electrical uses of alumininm to the Institution of Electrical Engineers last week. The high price to which copper has been forced by a combination of natural and artificial causes has made electricians take the greatest interest in aluminium as a substitute for copper. In America many thousands of tons of aluminium wire are already in use, but exhaustive tests have not yet been made on its durability. Mr. Kershaw stretched some aluminium wires on the roofs of buildings at St. Helens, Lancashire, and also at a town on the outskirts of Liverpool, and left them in the open air for ten months. At the end of the time the wires were taken down, and after being thoroughly scrubbed were weighed. It was found that most of them had gained in weight. This was due to the corrosion of the rods and wires, and to the settling of soot and dirt in the crevices. The conductivity for electric current of the wires suspended at St. Helens had diminished about 30 per cent. by the exposure, and the tensile strength had also diminished by about the same amount. This proves that the aluminium wire at present sold corrodes in outdoor work in our climate, and in manufacturing towns where sulphurous acid gas exists as an impurity in the atmosphere it corrodes rapidly. In the discussion Mr. Gavey, the electrician to the Post Office, stated that experimental trials of this metal for long-distance telephonic communication were being made, but that the results were far from satisfactory. The large coefficient of expansion for heat of aluminium has led to frequent breaks and consequent interruption of the service. Mr. Swinburne suggested that more thorough chemical tests should be made on commercial aluminium, as he found that very minute traces of impurity sometimes made it very rotten and friable. Professor Perry mentioned that Dr. Glazebrook, the Principal of the National Standardising Laboratory which is to be erected in Bushey Park, intended carrying out an exhaustive series of tests on this metal.

Widening of Hampstead-road.

WE are informed that a meeting of influential traders and ratepayers of St. Pancras has been held to consider the question of widening the Hampstead-road at its junction with the Euston-road, and a committee, including representatives from all the large business houses in Tottenham Court, Euston, and Hampstead roads, was formed with a view to bringing the matter before the London County Council as a Metropolitan improvement. It was urged that the congestion of traffic at this corner is now so great that it is of the utmost importance that something should be done to relieve it. We quite agree as to the desirability of the improvement; we need only point out that the widening ought to be made at the east side of Hampstead-road, so as to bring it into line with Tottenham Court-road on that side.

Water-colour Art of the Nineteenth Century.

THE rooms of the Fine Art Society are entirely devoted at present to an exhibition representing "The Water-colour Art of the Nineteenth Century"; the middle room containing early works, the west room works of deceased artists later in the century, and the south room works of living artists. Among the early brown drawings executed with the limited water-colour palette of that day, is Girtin's well-known grand view of Durham belonging to Mr. Roget, who formerly lent it to a Girtin exhibition at the Burlington Club. There are some works by less-known men of great interest; for instance, Powell's delicate little landscape (4) exhibited at the Royal Academy in the early part of the century. Shepherd's "St. Albans" (29) is a beautiful drawing, also Barrett's "Thames from Richmond Hill" (32), not equal, however, to John Varley's rendering of the same view (50). Among the later collection is to be seen Alfred Hunt's wonderful picture, "The Rainbow" (136), in which he almost succeeded in the apparently impossible task of painting light. There are two or three splendid examples of William Hunt's still-life painting; some interesting early works by F. Walker; one drawing by Boyce (132) which hardly represents his finest work; David Cox's "Welsh Funeral"; a beautiful "Chrysanthemums" subject by Mrs. Angell (110), and a fine example (116) of George Fripp's broad and unpretentious style of landscape-painting. The collection of the works of living artists is hardly so representative as it might have been; it gives the idea of representing what could be got rather than what might be desired. There is a fine example of Mr. Phillip's Highland landscape painting, familiar to us at the Society of Water Colours; Mr. Fulleylove's view of the "Temple of Wingless Victory"; Mr. Sutton Palmer's "The Joy of Spring" (194); these are among the best works in a collection which, however, can hardly be said to represent the later school of English water-colour art in any adequate manner.

SMALL GARDENS.*

ONE of the most pleasing signs in the architectural profession is the recognition of the fact that cottage architecture to be truly successful cannot be confined to the planning and designing of the house and elevations, but must have some say in the interior decoration (or what is oftentimes better the avoidance of decoration) and in the design and arrangement of the furniture, the control of the approach to the house and also the garden, or at any rate that portion of the garden which immediately surrounds the house. I am afraid that in many cases the bare recognition or assent to the principle suffices, and that whilst we see here and there sparsely distributed signs of the approaching architectural millennium, we are not quite there yet, and I fear that some of you, when I suggest the addition to the already long list of subjects through which you have to conduct your studies, a technical knowledge of garden-making, will almost hope that I do not succeed in proving my case, and yet I can promise that if I succeed I shall introduce you to a subject which shall yield you greater delights than any you have yet tasted in the field of design; and I may add, to the younger members of the profession, that you will soon realise that to a very large extent it is a vein which has not yet been fully worked or explored, and where you can within certain limits express the completeness of your own ideas, and determine what character of design shall rule in the making of a garden. I agree there are greater drawbacks and discouragements to encounter in the garden than in the house, and its interior arrangements or fittings, as so much more depends upon the aptitude and intelligence of the gardener who is to put your ideas into practical shape (a very worthy man in himself, according to his light and his training, but whose ambition is often measured by the local flower show exhibits) than upon either the builder, decorator, or furniture maker, whom you can restrict and restrain and guide by plans, details, designs, or sections.

To make myself quite clear I may say that the cottage residence which I have in my mind would range from the small 40*l.* semi-detached with its plot showing a frontage of 60 ft. and a depth of 100 ft., to the small house, with three entertaining rooms and six to eight bedrooms, stabling for two horses, and two acres of ground.

Before I proceed to give you a few hints, which I hope you may find of a practical character, I wish to show, first, that you cannot really successfully plan a cottage residence without deciding the principal features comprising the garden scheme. The designer of the cottage ought in any case either to design the complete garden scheme or otherwise agree to allow of an exchange of opinion between himself and whoever may have to plan and carry out the garden. Even supposing the landscape gardener to be an artist with insight into, and in full sympathy with, true architectural dignity and expression, the architect

* A paper read before a recent meeting of the Birmingham Architectural Association by Mr. T. H. Mawson.

has much the best opportunity of making a successful and complete plan. I also wish to show that if the architect does not undertake the designing the landscape gardener in all probability would not be asked to do it, and as a consequence the garden setting to the house, over which so much time and thought had been spent, would eventually be the joint production of the local jobbing gardener and the client. Respecting the first of these three statements, with whatever feelings or sentiments you may be inclined to approach gardens, I am perfectly convinced that in refusing to design the house as well as gardens I have lost some fine opportunities of gaining that wider outlook which it is so necessary the designer should achieve; and I am free to confess that any grasp which I may have of this principle of unity and completeness which should rule not alone in gardens and houses, but should underlie the character of the whole street, nay, of the whole city. I say, then, that this habit of viewing scenes in their broader aspect has largely resulted from the fact that I have been brought into connexion with a considerable number of clients who, having purchased their sites years before they were prepared to build, or even consult an architect, have nevertheless wished to do the necessary planting, and in some cases to lay out the outer fringe of the gardens. I have thus been compelled to consider the place as a whole, and to plan the houses in a way which I thought would best suit the site and my clients' probable requirements. In this way I must have prepared scores of plans for houses of all sizes, and I can assure you it has been a fine study. My reason for venturing this personal experience is because I feel that I am quite right in saying that it is just as necessary for the architect to realise the proper connexion between house and garden as for the garden designer to obtain a grasp of the character of the design and the planning of a house. I need only emphasise this by pointing out that the approach to a house, whether in the form of a drive, avenue, a simple court, or merely a walk, is the first impression a visitor gains, and generally the most important detail in the garden scheme, and is at the same time the introduction to the house itself. In passing, I would like to mention another great factor which, combined with others, has tended to broaden the vision and educate me to look beyond merely limited prospects; it is the laying out of building estates where the desired aim and object was to accomplish a worthy complement to pure air and pleasant surroundings without desecration and disfigurement, yielding pleasure to the beholder and profit to the proprietor. Architects who wish to lay out gardens would do well to cultivate this faculty of studying nature with a view to the attaining of aggregate effects, a grand antidote against mere sleight-of-hand draughtsman proficiency and commonplace invention, and against a too pedantic academical education. I am well aware of the ever increasing number of subjects that a modern architect has to keep pace with, but this faculty is, in a great measure, intuitive, although the foundation of it may be laid in the student's mind, and incentives and encouragements offered to continue; and when once acquired it has the tendency to soothe rather than irritate the tired brain and jaded spirits. This is a point which, I am pleased to be able to say, is being emphasised and reiterated by all sound reliable guides in architecture, although not, perhaps, entirely in the exact special direction now suggested; notably in Mr. W. H. Seth Smith's presidential address to the Architectural Association.

An architect is really the fittest man to design the garden, and I think it will be generally conceded, even by landscape gardeners, whatever gifts he may possess, that a circumscribed garden is seldom a success unless a formal treatment (why so termed I do not know) is applied. Mr. Kemp, who wrote that excellent practical work, "How to Lay Out a Garden," realised this. The advantage of this method is that the garden design is brought into direct relation with that of the house; that, in fact, a garden becomes a necessary outdoor extension of the family requirements, and of the entertaining arrangements—one set of apartments under cover, the other open to the interchange of shine and shower, and of each season's respective display. The relation of this series of garden apartments to the house would be more ably grasped by the person who had planned the house and knew the relative use of each room to the other. The ingenuity necessary for the planning of the house would assuredly find larger liberty and unfettered scope in controlling the whole. An architect occupies a much better position than either the landscape gardener or any one else to realise a successful garden, for if he had to be responsible for the whole he would take care that the only place in which a Maréchal Niel rose would grow is not occupied by the basement area; and that the steps to the beer cellar do not cut into the only piece of ground suitable for a flower garden; and that the coal-shoot is more than 3 ft. from the door of the principal entrance; also that the garden front was as far removed as circumstances would allow from the entrance front, and that the kitchen offices and stables, whilst helping the general effect, were so placed as to allow of their being screened from the private parts of the gardens. But perhaps the greatest advantage which the architect possesses lies in the fact that he has the control of the entire sum which his client is prepared to spend. I happen to know from experience what this means, for time and again have I, when called in to advise after the house was partly completed, found that the balance available for laying out the garden was totally inadequate for the purpose, with the consequent result that the garden was in a large measure a failure. When interests are divided one is prepared for this kind of thing; but if one realises that half of the money spent on, say, the barge boards, finials, and bristling insincere ornamentation would have given you some chance in the garden, one cannot help regretting the absence of some controlling master mind who, with perfect unanimity of purpose and comprehensive grasp, had had the spreading of the money over the larger area to the ultimate satisfaction of both architect and client. Now, do not misunderstand these remarks, for I quite sympathise with the architect, who must have realised that in the incapable hands of the jobbing gardener, who in no wise conceives the house and garden as one composition, the less money allowed for the garden the better, and that it was much better to make the barge board a counter attraction to the monkey-puzzler so carefully planted in the little circle in the centre of the carriage turn. The last consideration under this heading is that if you do not undertake the work it will fall into incompetent hands, or if a competent designer is engaged by the client direct, it is in the majority of cases because he has a reputation for a set form of garden design, or speciality, which, however advisable under the most favourable conditions, may be totally out of place here, but which the proprietor is persuaded, as mankind are by the foibles of fashion, is the only correct form under all circumstances, and which, unless the architect can prevent, he is determined to have. There is more than one garden designer in this country who has realised the inconvenience of a prevalent fashion brought about by the dictatorship of some temporarily popular, bumptious, capability Brown, and the expressed disappointment of his client when he proposes to treat the ground in a manner characteristic of the surroundings. Architects, it is understood, in dealing with the ground are not expected to conform to a set of ideas which are well known to be foreign to their profession.

Having given you my reasons why you should undertake the designing of small gardens, I now wish to state a few necessities and qualifications. In the first place, a proper survey with accurate levels is needed, and I can assure you that you will need to lay out a very large number of gardens before you can dispense with this necessary operation, even to the extent of making a preliminary sketch, for to be in any way successful the plan must be arranged to fit the ground and give expression to its contour. You must also be able to judge when ground requires draining; and having decided upon this necessity, be able to arrange it in an efficient and economical way. Judging from many schemes which I have seen for dealing with surface water, I am inclined to think that you could easily spend on land drainage a sum large enough to lay out in a satisfactory manner the whole of the ground. You must know a little about soils; this is a question which troubles would-be garden designers greatly. Now, for the horticulturist pure and simple this is a most important branch of study and research, but for the garden designer there are a few sound rules which will meet his requirements whether the soil is wet or dry, light or heavy, clay or gravel subsoil; whether the soil lies on limestone or in chalk. If the soil is wet, good drainage should remedy it; if clay, good drainage and the admixture of burnt clay, town refuse. Good trenching will usually be beneficial if light and sandy with an admixture of clay or cow manure; as a rule, however, you may say that a dry subsoil is best for a garden.

The first great desideratum is unity and cohesiveness. What is required here is some great controlling power to marshal and organise the petty clevernesses and talents and gifts, and make for and lead up to one ultimate end. The lack of this quality is what makes ninety-nine out of every hundred cities so disappointing when viewed from an eminence, such a motley jumble of points, angles, and pinnacles, style and no style. Almost all our national and municipal, parochial energies and aims lack this Socialistic quality; there is abundant individual cleverness.

But of all matters, says some one, do not interfere with the liberty of the subject in his garden. That certainly is not my motive; but I would, by all the powers of persuasion, try and induce the subject to use his liberty not merely to the gratification of his individual preferences, but to a certain extent to sacrifice these to obtain an aggregate effect; for instance, a fortunate possessor of a house in a city or suburb where vegetation was none too abundant and brick and stone largely predominate, with a fine, walled-in, geometrical garden, faultlessly laid out with neat box-edged beds, vases, and all that goes to make such a garden a success. But in taking a summary view of his surroundings, his eye longs for some counterbalancing mass of green, and to remedy this he sacrifices a part of his garden and plants a mass of hollies or limes or beech to tower above the boundary wall, to the gain of the outside beholder, the public, and at a loss to himself. That man is a benefactor to the town and neighbourhood.

In the few architects' gardens I have seen I notice that they usually plant shrubs, both formal and others, in the grass, evidently expecting them to thrive as they do in properly-prepared and tilled borders. This is a mistake, and for several years at the least, until the shrubs are thoroughly established, all grass and weeds should be kept clear of their roots. I know how much better grass looks when it sweeps up to the stems and trunks of the trees or the leaves and boughs fall over in a fringe upon the sward. How difficult it is to convince clients of the dignity of mown grass, and how often do we see the majestic trunks of a fine group of cedars or timber trees muddled up with the inevitable fussy rhododendrons.

It is in the direction of flowering plants rather than shrubs that variety is to be sought after, and for these you must, I fear, rely upon the nurseryman's knowledge of things, simply controlling the shape of the beds and borders in which they are to be planted, and, perhaps, the massing of the few varieties which are essential to the architect's garden, a few of which I will enumerate later.

Now, respecting the planting of hedges, screens, &c., before you attempt to do anything satisfy yourself that what you plant will grow. You may wish for a yew hedge, but it may grow so indifferently in the neighbourhood that you would get more effect out of common privet. Having made up your mind as to the character of the shrub or tree you wish to plant, you will find it comparatively easy to discover whether or not it will grow in the neighbourhood, and if not, what would form the best substitute.

But before we discuss any more technical difficulties we had better consider broad principles, which it is necessary to grasp before arranging your garden plan. I have already stated that the controversy which has been waged between garden designers and architects does not apply to small gardens, for all are agreed on the general principle of formality, although not agreed as to the detail by which this formality should be expressed. The aim and purpose of a small garden being totally different from gardens of large extent—the former expresses the sympathies, pursuits, and refinements of the home life; the latter, in addition to this, is first and foremost a mark of rank and opulence; the managing head gardener in the one case is the master or mistress of the house; presiding over the other is the skilled horticulturist, whose permission my

lady must ask before she may cut a flower. The small garden is probably the only form of rural pursuit open to its owner, and yields in relaxation and reflection a delightful change to the *sturm* and *drang* of his everyday existence.

Have you ever noticed in passing to and fro the difference between two gardens, apparently the same soil, and the same aspect? The one seems to have a blight upon it; everything, grass, flowers, shrubs, trees, seem to grow so tardily and sparsely, the shrubs stunted and starved, trees lanky and bare, the flowers shrivelled, scentless and blasted—a reproach to its neighbours; and in the adjoining garden everything is luxuriant and profuse, "Like fruitful trees by a well, whose branches hang over the wall." The flowers seem joyous and radiant; the shrubs healthy, strong, and clothed to the roots with foliage, or bent over with the added weight of foliage or berries; the trees healthy, ever ready to flash out the sunshine after the darkening storm and emerge greener and purer; the ivy, clematis, honeysuckle, jasmine, and roses peep in at the windows and flower in picturesque masses; the grass does not cake or languish, and burn in drought, but yields to the eye that refreshing, restful, compact aspect so desirable. But what is the reason for this contrast — this difference? You would be able to tell me almost at once if there were two adjoining houses in a correspondingly opposite condition, both apparently built with the same hand and with a corresponding amount of care—the one looking singularly happy, "Suitably received into the bosom of things," as some one has said; the other, in spite of suitable window adornments and owner's care, looks decrepit and unhappy. Your trained eye would at once glance at the unlevel joints, the slightly irregular ridge, finials, and chimneys, and other lines slightly out of the perpendicular—points scarcely discernible to any one else—and pronounce the verdict, "Bad foundations!" The foundation failure: unprepared soil is the cause of almost all garden failures. You may procure the choicest shrubs and flowers, manure the borders, roll the grass, but if the soil is not of sufficient depth, and is not properly prepared it will be of no avail. A grass lawn, a flower border, the root space for trees or for shrubs, all need their proper depth of soil and their own especial preparation, nor is it safe to trust the horticulturalist to do what is right in these matters. I have repeatedly seen gardeners laying turf where it was desirable to have a good tennis lawn with only 3 in. of soil, excusing themselves by saying that the grass would grow finer. I need not, however, enlarge upon this, as you will be doubtless familiar with the excuses for scrimping put forward by the builder. By all means save and store all turf and soil from the diggings and the foundations. For a flower border (and in the limited area devoted to flowers in most suburban gardens the expense would not be great), it is a good plan to lay, at a depth of about 2 ft., a layer of broken brick or some absorbent material, provided that the soil water drainage level is deeper; then to overlay this with a covering of ashes, and then to overlay this to a depth of about 21 in. with soil of desirable lightness; if too heavy should be mixed with sand, and should have abundant vegetable matter and fibre in it, such as the decayed turf from close green pastures yield. For trees and shrubs a depth of from 1 ft. 6 in. to 2 ft., with a plentiful admixture of the fibrous turf loam, though it need not be so richly manured as the flower border. Grass also requires a depth of soil not less than 8 in., with a well-drained bottom, properly prepared. Of course, as before stated, different soils, heavy or light, clayey or sandy, require different treatment, but although the first outlay may be greater, it is cheapest in the end to lay a sound foundation. "Prevention is better than cure."

Of course it is necessary to know what to plant, and herein is the most difficult problem with which you have to deal, and I venture to think that very few of you will ever master thoroughly the technicalities, nor is it desirable to understand all the hybrids and the eccentricities of the nurseryman's catalogue. At the same time, I think you would soon realise how few varieties of trees and shrubs are required for making a small garden beautiful. The present day tendency seems to be to cram in as many un-English varieties of trees and shrubs as possible, notably rhododendrons and common laurels, and aucubas, &c., their big polished leaves entirely out of scale with our sober harmonious box, holly, and yew of our predominating northern grey skies. It is the preponderence of such things that make town suburbs, town cemeteries, and town parks so disappointing. I oftentimes think that the quiet spacious dignity of the Harrogate stray would be preferable to many of the tortured, hillocky, unnaturally planted parks nowadays so common.

In a large garden there are many things great and small which are considered necessities: some beautiful in themselves, others difficult to classify and adorn and harmonise with an all-pervading sense of true garden effect. There are the tennis lawn and summer house; the rose border where, too often, size of flowers seems to be the chief attainment, lanky bare sticks through more than half the year, the roots covered with untidy manure, from which the eye instinctively turns to find delight in the rich green of the despised herb border of parsley and sage. The greenhouse, where can be grown geraniums and decorative house plants in winter and also in spring, and also grow tomatoes in the summer and show chrysanthemums in the autumn; the little garden frame which ensures a supply of sweet violets throughout the winter months; a potting shed, also, and garden house, and a paved shed with a big block for chopping firewood when from stress of weather the proprietor has nothing else to do; in fact, so many interests are to be catered for in this class of garden, and such a host of details on which you can exercise your ingenuity for garden effects that, to the man of sense and refinement, make-believes become grossly irritating. What he wants is a purpose-like garden.

There are two considerations I would like especially to impress upon you. First, the desirability of disabusing your mind of your preconceived notions of the art which is said to conceal art; and, on the other hand, the value of plain surfaces and of definite unhesitating lines. In ignoring the latter it is quite true that you may be able to cover your lawn with trees and shrubs from every part of the temperate zone, just as you may fill your drawing-room with all sorts of bric-a-brac; in both cases you may, instead of securing a sense of restfulness, succeed in giving them an aspect of fussiness. In laying out definite lines you may not get quite so many of those little surprises so much sought after in gardens, and you may not even be able, by the exercise of a little trick, to make your neighbour's garden look as if it belonged to you, but you will be saved the humiliating knowledge that your garden is a fraud, and that your visitors are sure to find it out.

So much depends upon locality, materials available, and the importance of the house, and the amount of money at your disposal, that the question of fences cannot be profitably discussed in this paper; but I would like to say that split oak, which lends itself to such a variety of treatment, is at once one of the simplest and at the same time one of the cheapest forms of fencing, and I would suggest that if we could in this country use, in conjunction with this fence, the trained lines of limes and laburnum as they are used in Holland and France, we could obtain some delightful effects. Holly is, of course, an admirable hedge shrub, so is beech and thorn, but in each case the wished-for effect is slow. Privet makes a hedge very quickly, but it must be out of the reach of horses and cattle, which are very fond of it. The fence which is least permanent, and least desirable, is the strained wire or iron hurdle.

We may now consider more fully the placing of the house on the ground so as to make the most of the ground. Where the extent of ground is strictly limited, as is invariably the case when you are building a small house, the greatest mistake you can make is to cut up the ground too much with drives, &c. This point cannot, in my opinion, be too strongly insisted upon. If your site is well chosen, the public highway will be along the west, north, or eastern boundaries, preferably the north, and just as you would, for the sake of aspect, arrange your living rooms from east to west, so you should see to it that you have as much land as possible on these sides. Now I hold an opinion, which I must admit is at the present time, even amongst architects, very unpopular, viz., when the plot does not exceed, say, two acres, drives are seldom needed, and that every real requirement can be met by a simple carriage-court connecting directly with the high road. This court you could probably enclose and pave for a less sum than you would otherwise spend on the drive. If the stable could be arranged to the west side of this court and the small kitchen garden, kitchen offices also arranged to this side, you would then have all the more ground at your disposal on the sunny side of your house. Plan No. 2 will give you some idea of the effect which can be obtained by a simple square court such as I have advised. Where the plot of ground is under half an acre it will be seldom that even a carriage-court can be arranged with advantage, but in Plan No. 1 I give you an example in which the court arrangement will be the making of the place; on the other hand, there is no court or drive to the house shown on Plan No. 3, two garden photos of which I propose to show on the screen directly. Where a drive is really necessary, make it as direct as possible. If the ground is fairly level and the junction with main road is convenient, a straight road, treated as an avenue, would give the best effect; but if the ground is rising and of irregular contour, then perhaps a curved drive would be the only one possible. There is something very pleasing in following the sweeping lines of a drive or walk encircling the base of a natural knoll or mound, and this has probably led one branch of the modern landscapists into manufacturing hillocks and mounds in order to multiply his curves and wriggles.

Above all things, do not make your gardens too large. Remember that perfect keeping is the soul of a small garden. I can assure you that you will have considerable difficulties with your clients on this score. Find out if you can what labour your client intends to employ. If a man only two days a week, a quarter of an acre would be sufficient; if he can employ a man and a boy, the garden might be as much as one and a half acres, or, if no glass, as much as two acres. You ask what I shall do with the remaining portion. If you have sufficient for a paddock for the pony you could not put it to a better use, and in any case you can never go very far wrong in planting an orchard; in fact, I always look upon an orchard—with its grass from late winter to spring broken up with colonies of snowdrops, crocuses, and daffodils; the trees in spring covered with masses of bloom; and, later, the boughs bending under its rich loads of fruit—the most delightful part of the garden. You also invariably require to plant for screen and shelter, and this alone would reduce the amount of ground to be kept under cultivation. There is also the arrangement of the wilderness, or wild garden. A piece of ground planted thickly with silver birches, beech, oaks and Scotch firs, hazel, dogwood and the spindle-tree and the savin, with spaces left for daffodils, wood hyacinths, foxgloves, and Solomon's Seal, having a meandering path running through it, or, which I think still better, a broad grass path with heather, vacciniums, mahonia, gaultherias, and other suitable flowering shrubs forming a border on either side, or, if very much shaded, with masses of fern and bracken on either side.

If your site has been well chosen, the ground will slope away from the house; if it does so in a southerly direction, you will have a very sunny garden. This fall of ground suggests terracing, an operation which in a suburban district requires much more careful arrangement and adjustment than would be the case in open country, where, as a foreground to charming distances, the balustrade serves as a frame or setting. In the case under consideration the eye should be induced to rest on the garden. Now there are roughly three ways of terracing—by walls, by grass slopes, and by planted slopes. Of the three, walls are the most satisfactory. A balustrade and expensive stone dressings are seldom appropriate to a small garden, except the house be severely classic. Terrace walls—maintenance considered—are probably the least expensive, and, to my mind, should never be built as if they were to remain naked. I can never think of a wall as so many yards super of Ruabon or Accrington bricks, but as a wall of the most delightful greenery. If you are in a brick country, any good hard brick the colour of which approximates to that of the house would answer; if in a stone country, rough rubble; and if possible the pointing omitted, so that toadflax, houseleeks, &c., could grow in the crannies; the coping, if dressed, to have very simple mouldings. The view of houses belonging to my brother and myself will give you

a better idea of what I mean by rough walling. The wall will cost under 5s. per yard super, and I think looks just as well as if we had spent three times the money. Grass slopes are practically impossible if the batter be less than 1 to 2, allowing step of 12 in. by 6 in.; but whatever batter you adopt for one bank should apply to the whole of the slopes in that part of the garden.

Planted slopes such as the one at Rydal Mount are very charming, but the great drawback is that you have to wait many years for the result. You can, however, obtain a very effective planted slope with mahonia, which, if fairly successful, will completely clothe the bank in two years, and also by planting Cotoneaster microphylla, which would clothe the ground in the same time. The one point to bear in mind when laying out batters is to avoid diminishing lines, as, for instance, when you make a sloping walk at the end from the upper to the lower terrace. In deciding the width of your higher terrace, you will need to bear in mind what I have said about cutting off the view of your ground below. Do not foreshorten your ground. Nothing gives more character to a garden than the form, arrangement, and quality of its grass lawns; and nothing is more refreshing than to look out of your room window on to a lawn perfectly formed and kept. To secure this perfect form is, I admit, a difficult task. I have often felt thankful that a tennis or croquet lawn was considered a necessary part of the scheme, and wherever possible I place this in front of the most important windows; or, if this is not possible, to so place it that a pleasing vista may be obtained across it. The terrace next to the house should be treated simply, but with a certain amount of colour from flowers, and certainly have a border next to the house in which to grow climbers. I am fond of broad paved walks on terrace next to the house, with a few quaint shrubs either planted permanently in beds or set out in tubs. Avoid the usual pattern of broad-brimmed vases filled with lobelia, echeveria, and calceolarias; green or oak tubs or big flower-pots are far better, and if filled with free-flowering green-leaved scarlet geraniums, hydrangeas, or Fuchsia gracilis; but do not have too many even of these.

If a garden is very small, I would advise the flower-borders being long and continuous, as in this way you get a much better display of bloom, especially when the borders run outwards from the house; and if the borders are arranged on either side of a walk, as in the summer-house walk which forms one of the series of photos for the screen. If this walk can be arched at intervals with honeysuckle, clematis, or roses, and the end finished with a seat or other suitable object, with yew or other suitable snug background, I know of very few garden effects which can surpass the one which might thus be produced.

Small panel gardens, such as you would wish to look upon from your entertaining room windows, invariably produce the best effect when in beds of the simplest design and at a lower level than the house. Such gardens, as a rule, should be perfectly level, and have some kind of boundary fence round them; this may be simply a low box edge, 2 ft. high, or a low trellis. In some cases it might with advantage be designed as a sunk garden, with grass slopes and steps at the corners or at each side; if on the same level as the rest of the ground, the flatness might be broken up by having a sundial or lead figure in the centre. For breaking up the remainder, you might plant golden or common Irish yews, golden mop-headed yews, standard Waterer's hollies, or even standard snowball trees.

According to the measure of the exact symmetrical balance secured in the house (though, as a garden designer, I do not desire to see any of those square box-like early Georgian erections so difficult to garden for) so ought the disposition of the features on the terrace so to be: grove to balance grove, and tree to balance tree, though not, I hope, carried to the point of having a greenhouse on each side of the garden, necessitating two heating operations and two objectionable chimneys, as shown in a recently-published design; such attempts end in the ridiculous. If perfect balance you must have, and if you wish to emphasise this balance by some erection, choose a pair of garden houses, one for use as a tool-house and the other as a summer-house; but if balance is secured by the freer and more picturesque methods adopted by the majority of modern architects of coupling and grouping of gables, chimneys, porticos, oriels, and the like. Balance ought to be secured in the gardens by similarly free measures. You would, whilst securing balance, obtain much greater variety.

One of the most awkward and expensive pieces of ground with which you will at any time have to deal is that in which the house does not follow the natural contour of the ground, but falls slantwise across the garden front of the house, thus giving you a bank of earth on one side which is many feet below the floor level, and on the other side banks of earth standing high above it. I am afraid that in the small plot you have little chance of compromising, but on the larger site I think if you had the garden to lay out, you would at times be able to devise some means by which a happier result could be obtained. Where you have a subsoil which is easily removed, such as soft sand, an alteration to the natural features may be more easily carried out than a modification of the plan of the house.

Although I have a great preference for walls when the ground slopes from the house, I prefer grass slopes when on the south side the ground falls towards the house. In this event an effective garden is very difficult of attainment, and unless very carefully managed you will succeed in giving a very damp, tank-like appearance to the place; the more your ground slopes away from the house, the more will you feel the necessity for plantations; but the reverse holds good when the ground falls from north and south towards the house. Bright colours from flowers, and occasionally primly-trimmed trees to mark distances, if you like, but no general scheme of plantations. If the ground is treated formally, you should start with a piece of level ground as wide as you can make it, and instead of doing the entire break in level in one lift, divide into two or three levels as the case may require, allowing a sufficient width to allow of a few flower beds on each.

I have earlier suggested a portion for the kitchen garden; but apart from actual convenience for working I really cannot see much objection to its being placed in any position, provided it can be treated as a part of the scheme. I maintain that some of the most charming gardens I have ever seen have been kitchen-gardens. In Scotland more particularly you will oftener find a beautiful old kitchen-garden which sometimes excels the pleasure-garden, and I would not even mind if the living-room window looked right down the central walk.

You will notice that I have hitherto said nothing about the effects which can be obtained by the arrangement of water. My reason for the omission is because there are so few gardens in which, owing to the cost of water supply, this luxury is available. I would point out, however, that a small wall fountain with its one falling spray judiciously placed at the end of a walk, or a small circular basin with a central jet, are often most charming. Even where this is not possible, it is often possible to have a small pond in which to grow water lillies and water hawthorn.

The last detail to which I wish to refer is the planting of the flower borders, in connexion with which, I may add, I rely almost entirely upon hardy perennials and those of the hardiest varieties. To go in for what is popularly known as bedding-out is to adopt one of the most expensive kinds of gardening; there are, however, a number of annuals and biennials, which are most useful for filling-up blank spaces. Amongst these I need only refer to stocks, candytuft, sweet allysum, mignonette, wallflowers, snapdragons, Canterbury bells, sweet rocket, forget-me-not, and penstemon. I would also allow bunches of scarlet geraniums, heliotrope, and verbenas. Amongst the perennials, hollyhocks (single or double), phloxes, dolphiniums, campanulas, lychnis, pinks (especially the common white) carnations, tufted pansies, and Michaelmas daisies should be planted in groups, the greatest care being exercised to secure effective groupings and continuous show of flowers throughout the greater part of the year; excepting on the outer edge of a border, where a continuous line of one thing, such as pinks, may look very effective. Avoid planting in lines, but rather try to secure a little irregular colony of each plant. If you intend to successfully cope with this most important branch of garden making, I would advise you to make the acquaintance of a nurseryman who has a good collection of hardy plants, and to visit his borders once a fortnight, making careful notes of the plants in flower at the time, their colour habit, and height.

After all the advice I have given you I can imagine some of you will yet decide that the subject is too big, or that the advice has come too late. If so, as one who loves a garden, let me suggest that when commissioned to design a house, in connexion with which there is to be a garden, that you should seek to co-operate with the garden designer from the time you prepare your first sixteenth-scale plan, and to agree on some mode of treatment of those parts of the scheme where there is an overlapping of interests, and on the successful treatment of which depends in no small measure the success of the whole scheme.

In one of the most recent reviews of my book I am told that I lack fire and poetry. Now, I have fortunately realised, and I think it was probably due to Mr. Sedding's delightful book, "Garden Craft," more than anything else, that a man engaged in the design of gardens was in danger of holding a position analogous to that of the lover in being more sentimental than practical. I have therefore endeavoured to avoid rhapsodical sentences on the one hand, and, on the other, of giving you a series of cut-dried garden designs. I have tried to give you a series of hints which would help you to do the designing.

THE SURVEYORS' INSTITUTION:

FUTURE OF THE LONDON WATER SUPPLY.

A MEETING of the members of the Surveyors' Institution was held at 12, Great George-street, Westminster, on Monday evening, Mr. John Shaw (President) being in the chair. The sole business of the evening was to resume the discussion on the paper by Mr. R. E. Middleton, M.Inst.C.E., on the London water supply, read at the preceding meeting, and printed in our issues for December 15 and 22.

The secretary (Mr. Julian C. Rogers) announced the receipt of a communication from Mr. Shaw, of Boston, Lincolnshire, bearing on the subject. In this Mr. Shaw pointed out that the population of London, and the amount of water per head to be supplied, had increased by leaps and bounds during the last quarter of a century, and while believing that with the supply at 30 gallons per head there was at least 10 per cent. of preventable waste, the water engineer of to-day might easily push back the rate of consumption per head to what it was twenty-five years ago. The quality of London water, both in the raw and the finished material, had enormously improved. The sanitary improvements in the towns and the villages above the intakes, the beneficial results of the supervision of the inspectors appointed by the Thames and Lea Conservancy Boards, had improved the raw material out of all proportion to the slight deterioration which the increase in population in such districts had tended, and the improvement in the work and the filters had provided a very high-class water. The writer agreed with the author in regarding the River Thames as the sheet anchor of the London water supply for many years to come.

Professor Robinson addressed himself to the utilisation of the Thames for the future water supply of London in a different way to that advocated by Mr. Middleton. He was of opinion that the right way to deal with the matter was by the construction of impounding reservoirs in natural valley tributaries of the Thames. Both Lord Balfour's and Lord Llandaff's Commission agreed that 300,000,000 gallons a day from the Thames, leaving 200,000,000 as a minimum to go over Teddington weir, should be the basis. It was many years ago that he came to the conclusion that the solution of the question was in impounding reservoirs. He laid his views before the Balfour Commission, and since that report was issued he had continued his investigations and had come to the conclusion that an impounding reservoir for 15,000,000,000 gallons could be constructed at a cost of 850,000*l.* and a storage reservoir for 55,000,000,000, at a cost of 1,640,000*l.* By the construction of a reservoir of that magnitude the flow in the Thames could be maintained at 600,000,000 gallons. He also went beyond that and ascertained that a reservoir could be constructed at the cost of 2,400,000*l.*, which would give a flow of 700,000,000 gallons per day in the Thames. These figures had been arrived at within the last few years—since, in fact, Lord Balfour's Commission sat, and they could be taken with a full sense of responsibility and as capable of

being proved at the right time and in the right place. Discussing the conclusions arrived at by Lord Balfour's Commission, Professor Robinson said he was not convinced by Sir Archibald Geikie's evidence as to the difficulties on geological grounds, nor of those attributed to the "flow-off" and the flood water. In the ten years that had elapsed very much had been learnt on the latter point. To sum up his ideas, what would be the effect of the impounding reservoirs? It would preserve a uniform flow in the Thames, it would enable the pumps to work advantageously, the Conservancy would obviously favour it, because it would be better for navigation and hygienic purposes, the water delivered to the intakes would be in a better condition, the filtering beds would be less taxed, and the interests of both the consumers and the water companies would be better served. So far as the water companies were concerned it was desirable that this scheme should not be ignored, for when it came to the question of purchase after the Water Boards had been formed, it would be found very much to the interest of the water companies if they could point out that by the expenditure of 2,000,000*l.* the public could be served equally as well as by the outlay of five times the capital. He had no hesitation in saying that the more the impounding system was investigated in the spirit of pure research the more would his views be confirmed.

Mr. H. H. Statham said he was anxious to say a few words about what he considered the totally inadequate ideas prevailing as to the quantity of water per head required by the Metropolis. Until there was a sounder idea upon that point the seriousness of the problem would not be properly appreciated. The fact that at this time of day we had a necessary of life served out by private companies, whose interests were the shareholders' and not the public's, was an anomaly so monstrous that he was surprised that public opinion had not arisen ere this against the system. He was not going into that subject; but one effect of that system was that water engineers had got into the habit of thinking of water as a substance to be dribbled out in the smallest quantities, and with them, the problem was not how much to give per head, but how much consumers could be screwed down to. The most preposterous example of that was a letter to the *Times* by a venerable engineer, who laid it down that with proper care the supply could be reduced to 25 gallons per head. This was calculated to carry their minds back to the "antediluvian period," when people took a bath on Saturday nights only. Of the bearing of baths upon public health there could be no doubt. When he first came to London, an eminent physician gave him two pieces of advice—one of which was to get *into* water every morning. He was emphatic upon that; that total immersion was what was really required in a bath; and to regard that as "waste of water" was simply foolish. On measuring the quantity the other day, he found that in the ordinary bath the amount of water for total immersion meant between 60 and 70 gallons, and if this was such a desirable thing in point of health, what became of Mr. Middleton's 35 gallons per head? But even if they left alone the total immersion and gauged the amount used in the upper-class houses, they would find it amounted to far more than 35 gallons. For himself, he considered 50 gallons the very least that should be thought of. The answer might be given that there were a large number who used hardly any water at all for ablution, and the surplus could go to those who wanted it. That he called a most immoral argument. It meant that because the lower classes were dirty they need not give them water. His contention was that they were bound to give them a chance to have a bath. But the fact was that, as education progressed, the more people learned about the conditions of health, and the more they came to understand that a copious use of water was desirable, the more they would require. Then, as to waste, it had been said that if the water supply was in the hands of a Governmental or Public Authority we should be far more controlled than we are under the water companies. On the contrary, he thought no system of administration would have the same interest in stopping so-called waste of water as the companies had. In Birmingham the municipality supplied both gas and water, and the mayor recently described their policy as endeavouring to run the former at a profit, but not the latter, because it was a necessary of life, and should be supplied as copiously as possible. But they would always be liable, as long as waste was checked by house-to-house visits, to be subjected to widespread irritation amongst consumers, and this system was open to this objection—that they did not get justice, because the officials employed on the visitation were always in a hurry, yet were anxious to justify their existence by reporting everything that was wrong—and more. He spoke thus from experience. When he came home one day a notice awaited him notifying half-a-dozen defects. He wrote to say who he was and challenging the statement, and their superior officials were sent who made a more careful inspection. Eventually the company admitted that four out of the six requirements were unnecessary. What was the remedy, then, for useless waste? He replied, supply by meter: that was a common-sense logical conclusion to his mind. With the supply checked by meter they made the householder interested in the amount consumed, and he would naturally see that the taps did not leak. They would, moreover, avoid that irritating visitation from house to house. Every one would pay for what he used, and the poor man who did not use very much would not pay for what the rich man used. The only valid objection he knew of was that the lower classes might be seized with a desire to economise and avoid washing altogether. That difficulty might be met by putting houses at a very low rental on a rating basis. Unquestionably, however, service by meter was one of the most effective systems for checking unnecessary waste—he meant real waste and not the copious use of water. But what he wished to urge was that water supply should be copious, not meagre and restricted. It was even more important in a great crowded city like London than in those American towns which supplied from 100 to 140 gallons per head. Those places, instead of being extravagant, were in advance of us in their notions of sanitation and civilisation, and instead of scoffing at them we should follow their example as nearly as we could.

Mr. Hassard, who remarked that he was the designer of the Welsh scheme now under consideration by the London County Council, said he desired to discuss probabilities as to the population and the amount of water received by the metropolis fifty years hence. The population of the metropolis at that time had been variously estimated by Royal Commissions and experts at from 15,000,000 to 30,000,000. He, however, regarded these figures as entirely illusory. He did not think the population in 1951 could possibly exceed 12,000,000, if, indeed, it reached that. Allowing 35 gallons per head per day, they would thus require 420,000,000 gallons daily—a supply which the Welsh scheme was fully capable of meeting, at a cost of about 38,000,000*l.*, or about 3*l.* 4s. 6d. per head of the population. As regards the quality of the water, that now supplied to London he believed was of 18 deg. of hardness. This, however, was not such as should he supplied to the metropolis of the world. The Welsh water was very soft—something about two degrees of hardness—but he did not advocate the use of water of such soft quality. A higher degree of hardness was more pleasant to drink and was equally suitable for all purposes of trade and manufacture. In his scheme the difficulty was met by the incorporation of 30,000,000 gallons of the most beautiful water from the oolite beds of the Cotswold Hills, and which could be carried by gravitation into London. If the 38,000,000*l.* he had referred to were borrowed for fifty years the whole capital would cease at that period, and on a 3 per cent. basis this great supply would have been brought to London at a cost of 2⅛d. per thousand gallons, or, upon a 2½ per cent. basis, at 2¼d. per thousand gallons. The idea that the Welsh scheme would involve ruinous taxation was quite unwarranted.

Mr. Vernon Harcourt (Oxford) said he feared that Mr. Middleton had scarcely treated the question in the spirit of free inquiry. His paper was mostly an argument in favour of the Thames as against any other source of supply, and even when speaking about that spirit of free inquiry, he declared that it could be proved conclusively that the bringing of water from Wales would mean a supply no better in quality than that drawn from the neighbourhood of London and would be very much more costly. Whatever demerits there might be in the Welsh scheme, he (the speaker) did not think anybody would care to say that the water from the Principality would not be preferable to that from the Thames. Professor Robinson mentioned that there were some valleys in the Thames basin which could be used as impounding reservoirs. He (the speaker) did not know which valleys were referred to, but he had occasion years ago to survey most of the tributaries of the Thames, in fact, all above Oxford, and there were very few of those, irrespective of geological formation, which would have been satisfactory as impounding reservoirs on account of the small fall of the rivers. There was, perhaps, one exception—the river Chalon, which flowed in at Oxford. He agreed with all that had been said about preventible waste—not waste which arises from having baths—but the waste in which taps were allowed to run continuously. The population question was a difficult one. Mr. Hassard was right in saying that all conclusions arrived at were based merely on assumptions. What seemed to him to be a cogent fact was that the birth-rate in London was not increasing, yet it was impossible to gauge what would be the possibilities of the influx into the metropolitan district by 1961. The author of the paper seemed to think that if the supply was sufficient to meet the wants to 1961, London might then be allowed to look after itself. There were two points to be considered in this connexion. One was—How far could they have a large population on the river and in the valleys from which the water supply was drawn, with their inevitable sewage farms and effluent always flowing into the river above the intake, without incurring some risks? Another point to bear in mind was this—Although they might tap the Welsh watershed now they might not be able to do so in 1961, when the necessity for it would be more urgent. By that time, possibly, some other town might have appropriated that source. What would London do then?

Mr. Baggallay, Q.C., feared that the discussion was digressing from the main point at issue. The question was rather, What was the necessary quantity of water required to supply the population adequately, and not the discouragement of waste. Nor was the question of the supply of water by meter to the point, though he was bound to point out, now that it had been mentioned, that the system had been tried at Norwich, and was found to be a premium upon dirt and nothing else. Those who had the control of small classes of property were induced to reduce the supply of water to their tenants to an irreducible minimum. There was also a Bill brought in and backed by Mr. Causton among others, but it was withdrawn as impracticable. The main point raised by the paper was, as he took it, this:—Is it, or is it not, right that London should use the two rivers which nature had caused to flow through her before she went elsewhere? Two things controlled that question—one was the cost of the utilisation of what was at her doors, and the other was that of the sufficiency and the quality of what water was there. With the run over Teddington Weir, in one week's rainfall an adequate supply could be obtained for London for a whole year. It was purely a question of the cost of storage, and he held that reservoirs could be constructed wherever wanted without the enormous cost of going to Wales. Waste had been the curse of London for many years, and he hoped a serious endeavour would be made to restrict it.

Mr. Lucas thought it idle to suggest that such an aggregation of human beings could crowd the metropolis as had been suggested. There was a limit to all things, and in an able paper read some years ago before the Statistical Society by Mr. Pryce Williams, he showed that when the population of London reached 8,000,000 the breaking point would be reached. For himself, he regarded that part of Mr. Middleton's paper dealing with the population as a dream. In the discussion the question of the purity of the water seemed to have been ignored. He had found that when the Thames was at it lowest London was taking half the flow. When the population was doubled it would, as a consequence, take the whole, and if any pumping was to be done from the Thames there would be only mud to pump. Moreover, the time would come when the population on the banks of the Thames would be so great that the purity of the water must suffer. He was convinced that the time must come when

London would have to go to Wales. They had gone for many years to the Thames, and the river had served them well, but there could be no denying the urgency of a new source.

Mr. Ashton Hill (Birmingham) said the subject of the metropolitan water supply was one of the keenest interest to country water engineers, and they were watching closely to see whether London would seek an augmented supply at home or from Wales. Mr. Middleton had proved an able advocate of the home scheme, but, excellent as the paper was, he was not convinced. His argument was—Why should we go away when we have a good supply close at hand? But Mr. Middleton acknowledged that London would have to go to some distant source in, say, half a century. If this be true now, they could not begin too soon, for the construction of necessary works would certainly occupy fifteen years, added to which would be another five years for preliminaries in getting powers, &c. That meant that by 1941 it would be necessary to go in for this distant scheme even if London got from the Thames valley all the water that Mr. Middleton said he could get. Having had long experience of deep-well water supply, he doubted if they could get so much as was indicated by Mr. Middleton from that source. He proposed to raise 384,000,000 gallons per day from wells alone. He (Mr. Hill) thought he must be a sanguine engineer to believe in such an enormous quantity from such a source. His pumping scheme seemed to him unworkable, and not justified by the experience of the past. On the other hand, the Welsh scheme involved no uncertainties, and by carrying out such a scheme, London would have entirely independent strings to its bow, and there was no doubt about the ability of engineers to bring it to the metropolis. If Liverpool, Glasgow, Manchester, and Birmingham could afford to carry out a scheme of gravitation, surely London would not be deterred from having the best scheme possible merely on the score of cost.

Mr. Cowper Coles, as an agent from the Welsh watershed, said he was afraid the question of compensation had not been sufficiently considered by the engineers. The Wye area was already burdened with a Birmingham scheme, and if London came to the same river for its supply, the remainder of the western area would be drained. This would have a serious effect upon the salmon fishing of the Wye, which was the largest net-salmon river in Wales, England, or Scotland. Estates were sold on the increased value attaching to this privilege. The speaker also pointed out that Welsh water had a peaty taste—to verify which they had, he said, only to ask a Liverpool man what he thought of it.

Mr. Morris remarked that, as so much depended on the future population of London, it would be well to take up the several schemes in blocks, so that there should not be a waste of public money.

On the suggestion of the Chairman, the discussion was, at 9.45, adjourned for a fortnight.

SCHOOLS, SNEYD GREEN, BURSLEM, STAFFORDSHIRE.—The new schools which the Burslem School Board have just erected at Sneyd Green have been built on a site containing 5,000 square yards with a frontage to the main road at Sneyd Green of 88 yards. There are two blocks of buildings, the main block being for the accommodation of the boys and girls, and the second being for the infants. The larger block comprises a central hall 51 ft. by 36 ft., which is lighted from one side and from the roof, and six classrooms, each 25 ft. square, in each of which sixty children may be seated. All the rooms are finished with concrete and wood block floors, glazed tile dadoes, picture rails, plastered walls and ceilings, and wrought iron gas fitttings, and in the classrooms are galleries of three tiers. Warmth is supplied by means of hot-water, and ventilation is effected through Tobin tube inlets and roof extractors. The windows are large and in every room additional left-hand light is secured. Similar in construction is the infants' department. In this case, however, the central hall is smaller, being 45 ft. by 28 ft., and there are four classrooms measuring 25 ft. by 22 ft., giving a total accommodation for 300. Adjoining the schools is a caretaker's house, and there are extensive playgrounds which are asphalted, and covered play sheds. The general contractor is Mr. J. J. Longden, of Burslem, and the sub-contractors are Messrs. T. W. Eardley (plumbing and glazing), H. Barber (stone work), Truswell & Sons (heating), W. Durose (ironwork), and Bennett & Sons (furniture). The cost of the building and its equipment will be about 8,200*l*. The site has cost 1,100*l*. The whole of the work has been executed from the designs and under the direction of the Board's architects, Messrs. Wood & Hutchings, of Tunstall.

COMPETITIONS.

PORTSMOUTH TECHNICAL INSTITUTE.—The Portsmouth Libraries and Museum Committee have selected the plans for the new Technical Institute, which is to be erected at the back of the Town Hall. Three premiums had been offered, 100*l*., 75*l*., and 50*l*., and Mr. Cross, of London, was appointed the assessor. There were six competitors, and their own estimate of the cost of the work ranged from 43,000*l*. to 55,000*l*. The assessor's lowest estimate was 46,498*l*. He awarded the first premium to Mr. C. E. Smith, of Victoria-road North, Southsea, whose estimated cost of the building was 43,086*l*. The assessor's second award fell to Messrs. Rake & Cogswell, Prudential Buildings, Landport, their estimate being 44,600*l*., and the third to Mr. W. C. Bevis, Elm-grove, Southsea, who estimated the work at 43,000*l*., though the assessor's estimate on the same basis was 48,610*l*. The other competitors were Messrs. A. E. Guy, of Albert-road, Southsea; C. Ball, Kent-road, Southsea; and J. W. Walmsley, of King's-terrace.

PRINCE'S PARADE, BRIDLINGTON.—In the recent competition for extension of 1, Royal Prince's Parade, Bridlington, the first premium, of 35 guineas, has been awarded to Messrs. Mangnall & Littlewood, 42, Spring-gardens, Manchester. The second premiated design was by Mr. J. Freebairn Stow, Corn Exchange, Uxbridge. The other competitors (as given by a local journal) were Messrs. Wood & Frenchling, London; Messrs. Beal & Shepherdson; Mr. S. Dyer, Bridlington; Messrs. Shepherdson & Beal; and Mr. Matthews. The plans selected provide for an iron pier and promenade with a pavilion to accommodate 3,000 persons. The estimated cost is about 28,000*l*.

BRIDGE, SYDNEY.—The premium of 1,000*l*. offered to the engineers of the world for the best design for a bridge to connect Sydney with the North Shore has been awarded to Mr. E. Cruttwell, engineer, of Westminster. The tender sent in with the plans by Sir William Arrol, the builder of the Forth Bridge, was for the amount of 2,927,236*l*. There were twenty-four tenders sent in from all parts of the world, the lowest being for 991,870*l*. The Board of Examiners, it is stated, considers the whole of the plans disappointing, and not one is recommended for adoption.

ARCHITECTURAL SOCIETIES.

SHEFFIELD SOCIETY OF ARCHITECTS.—A lecture on "The Housing of the Working Classes" was given before the members of the Sheffield Society of Architects and Surveyors by Mr. H. Potter, at the School of Art, on the 10th inst. Mr. J. Smith presided. In introducing the subject, the lecturer said he did not intend to discuss the social or political side of the question, but to touch on the difficulties that architects had to contend with in recognising the natural requirements made by owners as well as tenants, and to see how they could best serve the interests of both, the latter quite as much as the former, by giving the owner a good security for his outlay, and the tenant the best accommodation possible for the rent he has to pay. In providing dwellings for the working classes, one of two methods was generally adopted, either to build blocks of four or five storied tenement buildings in the centre of a town, or to erect cottages in suburban districts, to accommodate one family only, or, at any rate, not more than two. He proposed to limit his paper to the consideration of the latter class, viz., small houses to be built either semi-detached, in blocks of four, six, or eight, or even in larger terraces. In a locality with a large working-class population earning good wages, there must be a steady demand for this class of residence, and owing to the existence of an excellent service of electric trams and cheap fares, Sheffield possessed one of the best aids for solving its own housing problem, for by this means there was easy access to the suburbs, enabling a working man to live where he and his family could enjoy a house and a reasonable space of ground to themselves, pure air, and be within easy reach of the country, instead of in a suite of rooms in a lofty tenement building, situated in the centre of the city. But there were probably here, as in most towns, a certain number of men who, owing to the nature of their calling, must live in the heart of the business centre, and for these an excellent scheme was now being carried out by the Corporation in the Crofts area. There were many difficulties to be contended with by architects in designing these houses, which were all due to the important consideration of cost or the rent the occupiers can afford to pay, this being influenced by (1) the frequently high price of land; (2) the increased cost of labour and materials; (3) the adoption of more stringest building regulations by all sanitary authorities. In reference to the last, no objection could be raised to by-laws that tended to check unsound and unsanitary buildings, but architects did feel at times that they added unnecessarily to the cost. In this respect Sheffield enjoyed privileges in two important instances, viz., it was permitted to have two stories and rooms in the roof with a 9-in. external and party wall, and it was not necessary to carry the party walls through the roof for a height of 15 in. After giving some instances, the lecturer briefly referred to some points that arose in laying out estates. He suggested that, instead of large owners and public bodies cutting up the land at the rear of the houses into small strips for so-called gardens, each house might have a small yard, and the remaining land be kept as one large open space for the benefit of all the adjoining houses. With sites 70 or 80 ft. deep, a space 40 to 60 ft. wide could be obtained extending the entire length of the houses, which would form an excellent playground for the children, would facilitate the drainage, give good access to the rear of the premises for the delivery of fuel and collection of refuse, and save the loss of frontage caused by providing for this in the ordinary way. After making a few remarks about roads and the length of time these were sometimes allowed to remain in an unfinished state, the lecturer discussed the planning of these small houses in detail. He referred to a series of plans shown in the room illustrating houses occupying frontages of from 12 ft. to 18 ft., beginning with four-roomed cottages for one family, and gradually increasing in size up to six and seven rooms. Then followed plans for double tenements, representing a class of house for which there is an increasing demand in industrial centres. They consist of ground and first floors arranged in "flats," each having a separate front entrance, and being self-contained in every respect. They meet the requirements of a large class of people who are unable to pay the rent required for single tenement houses, and avoid all the inconveniences that arise if two families share a house that was originally intended to be occupied by one. In conclusion, the lecturer referred to the external treatment of these houses, and in making a plea for a more careful consideration of this part of the subject, showed drawings illustrating the use of different materials in a simple, but effective manner. The lecture was illustrated by drawings. A discussion followed, and, on the motion of Mr. E. M. Gibbs, seconded by Mr. W. C. Fenton, and supported by Messrs. T. Shaw and the chairman, a vote of thanks was accorded to the lecturer. A ballot was taken, and the following gentlemen were duly elected:—Mr. H. I. Potter, associate; Messrs. W. A. Forsdike and J. A. Whitehead, students.

ARCHITECTURAL ASSOCIATION OF IRELAND.—An ordinary meeting of this Association was held in the Grosvenor Hotel on the 8th inst. In the absence of the President the chair was occupied by Mr. Walter Doolin, M.A. Mr. M. J. Tighe, in the affirmative, opened a debate, "That the present system of apprenticeship is best suited for the training of an architect." Mr. F. G. Hicks replied in the negative, and a discussion ensued, in which Messrs. Hudman, Lynes, R. M. Butler, Scott, Allberry, and the chairman took part. Ultimately the following resolution was carried—"That, in the opinion of this meeting, the present system of pupilage, concurrent with a compulsory collegiate training and qualifying examination, affords the best promise for the architect of the future."

LIVERPOOL ARCHITECTURAL SOCIETY.—At a recent meeting of this Society at the Law Library, Castle-street, Professor Simpson, of University College, presided, and said that they united in wishing the Society a prosperous new century. They formed the oldest architectural society in the provinces, and claimed also to be the strongest. Their warmest congratulations were extended to Mr. Pearce Edwards upon his appointment to the position of City Architect at Bradford. Mr. Woolfall seconded a vote of congratulation proposed by the Chairman, and it was recorded on the minutes. A paper by Mr. M. H. Baillie Scott, o Douglas,

who was not able to be present, was then read by the Chairman. Its subject was "The Planning of Small Country Houses."

MANCHESTER SOCIETY OF ARCHITECTS.—On the 10th inst., at a meeting of the Manchester Society of Architects, held under the presidency of Mr. E. Hewitt, at Standard Chambers, King-street, Mr. Hugh Stannus, of the Manchester Municipal School of Art, read a paper on the subject of the training of an architect. Mr. Stannus mentioned that since he had undertaken to read a paper on this subject, the authorities of Owens College had made a move forward in their direction, and what he had to say was somewhat influenced by their intentions in the arrangement of his plan into years and sections. He acknowledged some indebtedness to Mr. Arthur Cates, the former Chairman of the Board of Examiners of the Royal Institute of British Architects, who had, he observed, great experience of the necessity and value of the higher education in architecture. It might be asked whether such education was necessary, but in Manchester that question was already answered in the arrangement by principals for their pupils to attend the School of Art for an afternoon in each week. Speaking generally, it might be said that beyond what was termed professional practice, which could be learned nowhere else, there was not much opportunity for the higher education in most modern offices. The principal was too much engaged to afford time to be a schoolmaster, and the senior draughtsman had rather to get work out of the pupils than to pump education into them. No system could be exhaustive, and the end of all the education they could give was to enable the student to educate himself. Should the system be academic or individual? If they could afford one separate teacher to each student then the system might be individual, but in such a case the student lost the advantage of seeing the various solutions of different problems by other minds and the further great advantage of emulation. So far as his experience extended, no student who had any originality in him ever lost it by judicious, systematic training. Hence he thought it better to teach according to a well-considered system during the earlier period of pupilage, and to leave the development of individuality to come in the later stage. In other words, he would generalise in the earlier and specialise in the later period. It had been objected that the academic teaching reduced all students to one dull level of monotony, and that as a result of this a street in Paris was the same from one end to the other, and was not so interesting as a street in London, where every shopkeeper did what appeared right in his own eyes, seeking only to shout louder than his neighbours. He contested the objections, and contended that the street in Paris was not the same from one end to another. Within the limits which had been fixed for the common good, there was a greater variety of artistic detail than in London, for the Parisian architect, having his mind set free from the lower considerations, could devote himself more fully to what, after all, gave the measure of the artist—the arrangement of the features and the details. Further, the academical method of study would bring to the student's mind the strength and the weakness, the applicability and the inapplicability, of the typical treatments that were used in each of the great styles to the different problems of modern building, and when a man had learned what to do without then he was on the direct road to make his own style by the omission of useless details. And as minds varied so would the architecture of our streets. Discussing in detail a chart of studies which he had drawn up, Mr. Stannus said he assumed the length of the course as three years, not because it was long enough, but because it was generally all a man could give. The method of study in the old times at Paris used to be to learn (1) all about construction, (2) all about plan, (3) all about elevations, and (4) mix the three. He would prefer to run these concurrently, to emphasise the fact that architecture was one. In the course of further comment he urged that students should look upon planning as a fine art. He assumed in the chart he drew up that a student would be able to attend on the instruction referred to for five hours a day for five days in the week for forty weeks in the year. The collegiate recognition of architecture was a desirable object in view of the special circumstances of architectural education. He considered, however, that two points demanded attention—namely, the requirement of attendance at lectures as a condition of granting degrees, and the examinations. With regard to the attendance at lectures, which was possible in the collegiate life and discipline of the older universities, he reminded them that the modern stressful life of Manchester, with its belt of subsidiary cities, killed the monastic ideal and left no place for monastic manners. Still, if attendance was required, he would plead that this should not be enforced for a period of three years from the inception of the system. Further, any student who desired to proceed to a degree during this transition period should be admitted to the examination on proper recommendations. A certificate might be granted to any student who had attended the lectures of one particular section and satisfied the examiner on it, without his being compelled to take the whole course. Thus the system would be made elastic until sufficient experience had been gained. He regarded examinations as necessary at the end of every course, whether long or short. The aim should be to make the education systematic rather than sporadic. While they did not desire to manufacture Admirable Crichtons, they ought to strive to deepen and broaden the education of the architect of the future, so that in his intercourse with his client and the contractor he should hold aloft the ideal of a cultured, practical, and trusted adviser.—In replying to a vote of thanks and remarks which had been made by members present, Mr. Stannus said that he thought they would have to reconsider the question of pupilage. Students would go first for academic instruction for three years, or whatever might be the period, and then architects would find their pupils worth more to them. They might be able to take a pupil without any premium at all. The academic system, in his view, should come first, and then the student could go into an office to learn professional work. He thought they ought to welcome the institution by any college of a course which would tend towards the raising of the professional tone, which they all had at heart.—*Manchester Guardian.*

RATES OF WAGES IN THE BUILDING TRADES.

MANY interesting facts, based on statistics officially supplied by various representative organisations, are set forth concerning the above subject in a Report made by Mr. H. Llewellyn Smith to the Comptroller-General of the Commercial, Labour, and Statistical Departments of the Board of Trade, and presented by command of her Majesty to both Houses of Parliament. The Report deals with the standard rates of wages and hours of labour in force in the United Kingdom at the beginning of 1900, and represents the changes which have taken place since a similar Report was issued in 1894. It thus forms a fresh starting-point in the investigation of these important subjects, which it is intended to continue, and of which the results will in like manner be published periodically. Mr. Llewellyn Smith gives interesting explanations as to the meanings attached to the terms "time-wage" and "piece-wage," and he estimates that, taking into account all classes of workpeople, male and female, including those employed in agriculture and domestic service, no fewer than 74 per cent. of the workpeople employed in the United Kingdom appear to be engaged in industries in which time-wage is the most prevalent system. By the "standard rates of time-wage" is meant those rates which are recognised as applicable (usually as minimum rates of pay) to the remuneration of a considerable number of workpeople engaged in a given industry at a given place. "It will be understood," remarks Mr. Smith, "that, while competent workpeople, whose remuneration is governed by a standard rate of wages, are not expected to work—and would not consent to work—for a lower rate, individual workmen, whether on the ground of the possession of special skill or the difficult or dangerous character of the work, may and do receive more than the standard rate of wages ruling for their trade in the locality. On the other hand, workmen who have not yet mastered their craft (improvers, &c.) will not demand or receive the standard wage; and in some trades the arrangements between employers and employed permit of workmen admittedly too old to do a fair day's work accepting wages lower than those recognised as the minimum for the general body of workmen." In certain trades (Mr. Smith goes on to remark), more especially in the different branches of the building trade, the weekly wages of the workpeople fluctuate according to the season. The rates of wages and hours of labour upon which his (Mr. Smith's) returns are based are, therefore, those which obtain in the summer months. The conditions of employment prevailing throughout the winter months are not uniform, distinct arrangements being made with respect to different parts of the winter season, during all of which, however, the standard hours of labour are shorter than in summer, and in some cases slightly higher rates of time-wages are paid. As between different branches of the building trades the amount of seasonal fluctuation in hours and wages varies considerably, some classes of workpeople (*e.g.*, carpenters and joiners) being employed under cover, and being, therefore, in many cases employed for the same number of hours per week in winter as in summer. With regard to local variations in rates of wages, it is mentioned that in the building trades, while bricklayers, for example, receive 10d. in London and in a large number of other towns, their wages fall to 6½d. in several districts (Stroud, Wisbech, and Bridgwater), and to 6d, an hour, or even less in others, as in Tiverton and Barnstaple. The wages of carpenters and joiners vary from 10d. an hour to 5d. per hour in different districts, and similar variations are shown by the wages of many other classes of operatives. The causes of local variations in wage-rates are at once numerous and complex. As a rule, wages in the same trade are higher in London and other large towns than in the smaller centres of industry. In part this fact is attributable to the higher cost of living incurred by the workmen, especially in regard to house rent; in part, no doubt, to the fact that on the average a somewhat higher standard of skill is expected in large centres, and that a higher rate of pay once established has a tendency to perpetuate itself by attracting the more highly-skilled workmen. Moreover, in some cases the wider labour market and the greater mobility of the inhabitants of a large town may place them in a better position to demand high pay than those workmen who live in a small town or village, and would have to migrate to a considerable distance in order to obtain work elsewhere. In an appendix particulars are given of the standard rates of wages and usual summer hours of labour (exclusive of overtime) recognised in the year 1900 for the principal classes of building trade operatives in the different towns of the United Kingdom. From this table we extract the figures applicable to a few typical places. Rate per hour for bricklayers:—London district, 10d.; Carlisle, 8½d.; Bradford, 8¾d.; Liverpool, 9½d.; Manchester, 10d.; Bristol, 8½d.; Hereford, 7½d.; Potteries District, 8¼d.; Shrewsbury, 8d.; Colchester, 7d.; Oxford, 8d.; Norwich, 7½d.; Bournemouth, 7½d.; Brighton, 8d.; Cowes, 6½d.; Portsmouth, 8½d.; Barnstaple 5½d.; Bideford, 5½d. For masons:—London district, 10d.; Carlisle, 8½d.; Bradford, 8¾d.; Liverpool, 9½d.; Manchester, 9½d.; Bristol, 8½d.; Hereford 7d.; Potteries, 8½d.; Shrewsbury 8d.; Colchester, 9d.; Norwich, 7½d.; Oxford, 8½d.; Bournemouth, 8d.; Brighton, 9d.; Portsmouth, 8½d.; Barnstaple, 5½d. For carpenters and joiners:—London district. 10d.; Carlisle, 8d.; Bradford, 8½d.; Liverpool, 9½d.; Manchester, 9½d.; Bristol, 8½d.; Hereford, 7d.; Potteries, 8½d.; Shrewsbury, 8d.; Colchester, 7d.; Norwich, 7½d.; Oxford, 8d.; Bournemouth, 7½d.; Brighton, 8d.; Cowes, 6½d.; Portsmouth, 8d.; Barnstaple, 5½d.; Bideford, 6d. For plumbers:—London district, 11d.; Carlisle, 8d.; Bradford, 8d.; Liverpool, 9½d.; Manchester, 9½d.; Bristol, 8½d.; Hereford, 7d.; Potteries, 8½d.; Shrewsbury, 7½d.; Colchester, 8d.; Oxford, 8½d.; Brighton, 8d.; Barnstaple, 5d. For plasterers:—London district, 10d.; Carlisle, 8d.; Bradford, 9½d.; Liverpool, 9½d.; Manchester, 9½d.; Bristol, 9d.; Hereford, 7½d.; Potteries, 8½d.; Shrewsbury, 8½d.; Norwich and Oxford, 8d.; Bournemouth, 7½d.; Brighton, 8½d.; Portsmouth, 8½d. For painters:—London district, 8½d.-9d.; Carlisle, 7½d.; Bradford, 7¾d.; Liverpool, 8½d.; Manchester, 8½d.; Bristol, 8d.; Hereford, 6d.; Potteries, 7½d.; Shrewsbury, 6½d.; Colchester, 5½d.; Norwich, 6d.; Oxford, 6½d.; Bournemouth, 7d.; Brighton, 7d.; Cowes, 6½d.; Portsmouth, 6½d.; Barnstaple, 5½d. For labourers:—London district, 7d.; Carlisle, 5d.-5½d.; Bradford, 6d.; Liverpool, 5d.-6d.; Manchester, 5½d.-7d.; Bristol, 5½d.; Hereford, 4d.; Potteries, 5½d.-6½d.; Shrewsbury, 5½d.-5¾d.; Colchester, 4d.-4½d.; Norwich, 5d.; Oxford, 5d.; Bournemouth, 5d.-5½d.; Brighton, 5d.-5½d.; Cowes, 4¼d.-4½d.; Portsmouth, 6d.; Barnstaple, 3½d.-4½d. Hours of labour:—London district.—For bricklayers, masons, carpenters and joiners, plasterers, painters, and labourers, 50 hours; for plumbers, 47. Carlisle.—For bricklayers, masons, carpenters and joiners, 50; plumbers, 52½; plasterers and painters, 54; labourers, 50-54. Bradford.—For masons, carpenters and joiners, plumbers, and plasterers, 49½; painters, 52; labourers, 49½. Liverpool.—For all operatives, 49½. Manchester.—For bricklayers, 54½; for masons, carpenters and joiners, and plumbers, 49½; for plasterers and painters, 52; labourers, 49½ to 54½. Bristol.—For all operatives, 54. Hereford.—For all operatives, 56½. Potteries.—For carpenters and joiners, 53; for all others, 54½. Shrewsbury.—For all operatives, 51½. Colchester.—For all operatives, 56½. Norwich.—For all operatives, 56. Oxford.—For masons, 54; for all others, 53½. Bournemouth.—For masons, 56½; others, 55½. Brighton.—For bricklayers, carpenters and joiners, plumbers, and labourers, 56½; for plasterers, 56; for masons, 55½. Cowes.—For all operatives, 56½. Portsmouth.—For painters, 55; for all others, 55½. Barnstaple.—For all operatives, 56.

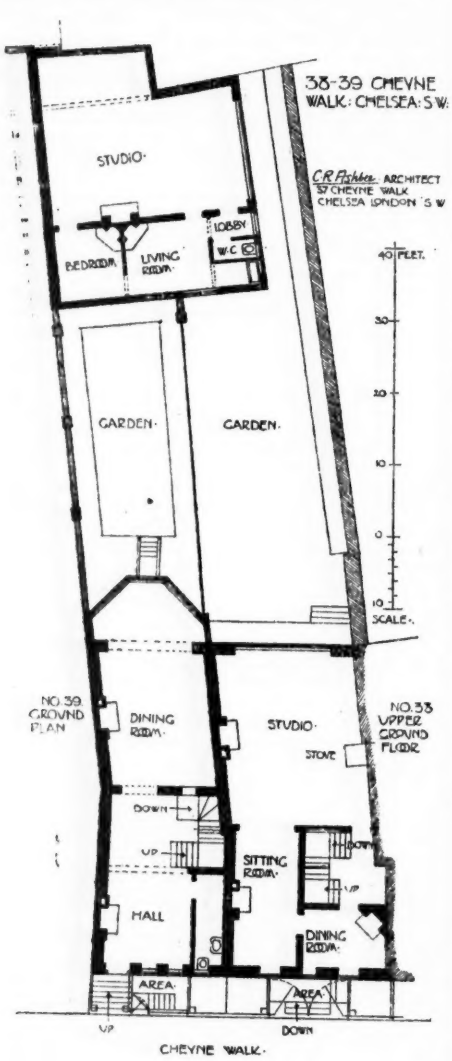
Illustrations.

HOUSES, 38 AND 39, CHEYNE-WALK, CHELSEA.

THE main lines of the elevation of these houses were fixed by the adjoining "Magpie and Stump House," No. 37, Cheyne-walk, and the elevation is designed with reference to it.

No. 38 is a combined studio and residence, and has also a studio in the rear.

No. 39 is a dwelling-house only. There are several details of interest in it; the hall has a panelled dado of American whitewood, with



a decorative frieze by Mr. F. C. Varley, showing all objects of interest along Cheyne-walk in 1900, from No. 1 to the World's End. There are also in various rooms some interesting carved wood fireplaces of early 18th century date, together with some panelling from the old houses formerly on this site.

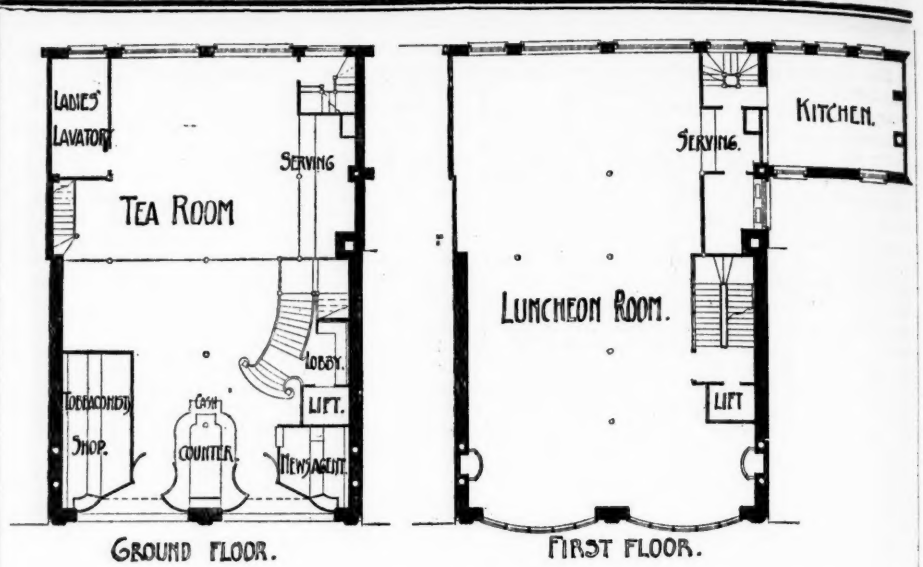
C. R. ASHBEE.

PROPOSED SEASIDE RESIDENCE, HUNSTANTON.

THIS is a design for a small seaside house at Hunstanton, with the sitting-room apparently intended to face inland, and not towards the sea, probably for consideration of shelter from cold winds. The pantry and scullery is cleverly placed between the dining-room and kitchen, and a servants' stair is ingeniously got in where it might have been thought there was hardly room for it. It would have been better if the servants' water-closet had been a little more separated from the scullery department; it would have been preferable, in fact, with an entrance from the outer air.

The architect is Mr. C. F. Skipper, of London.

The words "elevations 8 ft. scale," &c., of course refer to the size of the original drawing, but could not be erased from the lithograph without spoiling its appearance. As we have often remarked, it is always better to draw out the scale on a drawing, instead of merely noting it in writing.



New Premises for the Dublin Bread Company. Plans.

DESIGN FOR THE END OF A SCHOOL HALL.

THIS design by Mr. F. Winton Newman was one made in the Royal Academy Schools, and included in the last exhibition of students' work at the Royal Academy.

The conditions were that the hall was to be 50 ft. wide and 70 ft. from floor to ridge, and to be entered through a vestibule with a large window over to light the hall. There was to be a clock turret on the ridge close to the gable end.

S. FRANÇOIS DE SALES, S. TROND, BELGIUM.

THE town of S. Trond contains about 14,000 inhabitants, and is situated about twenty-one kilos. from a junction called Tirlemont. The town contains some good churches, amongst them being St. Peter's, a small Romanesque church, and also the ruins of the church of the Seminary, formerly the Abbey of St. Trudo, which was destroyed during one of the rebellions. The Church of S. François de Sales is the church of the monastery, and is entirely served by the Franciscan monks. It is situated in a small street leading off the Grande Place. There are seven bays in nave, each 19 ft. between the large buttresses; the chancel diminishes in width by two sides of an octagon, and this inside is utilised for two altars against them. The choir is of three bays terminating at the east by an octagonal end. There is a very large and lofty altar at this end. The church is under one span, and pilasters with deep sub-bases go up to a considerable height, whence the vaulting springs. The western façade is built of stone, with red bricks between the pilasters. The church was built in the seventeenth-eighteenth century. By the side of the church is the monastery. There is also a Town Hall in the Grande Place with a sixteenth-century tower, which is very picturesque; it contains many small bells. This place is quite out of the way of the general run of travellers, but is well worth a visit.

T. MARTIN BROOKS.

NEW PREMISES FOR THE DUBLIN BREAD COMPANY.

THIS building has recently been erected in Sackville-street, Dublin. It was found necessary to build the front in the form of two distinct houses, in order to preserve the lines of separate takings, and an attempt has been made to reconcile the consequently dual effect with the uniform purpose for which the building was to be used.

It was also a motive in the design that it should be suitable in character to its purpose, and this principle dictated the emphasising of the first, or luncheon-room, floor as the principal one by the carrying out of large bow windows, over which a large balcony has been provided, accessible from the smoking-room.

The lower portion of the front, the bay windows, and all dressings throughout are of Portland stone, and the rest of the facing of Thompson & Co.'s pressed bricks.

The general contractor was Mr. Jas. Beckett. Messrs. McCulloch & Navin are responsible for the painting and decoration; Messrs. Henry Hope & Son, of Birmingham, for metal casements; and Messrs. A. Smith & Stevens, of London, for electric lift.

GEORGE F. BECKETT.

LONDON BUILDING ACT, 1894:

TRIBUNAL OF APPEAL CASE.

THE Tribunal of Appeal under the London Building Act, 1894, sat at the Surveyors' Institution, Westminster, on Tuesday, to hear an appeal by Messrs. Saltwell, Tryon, & Saltwell, on behalf of Mr. James Fryer, against the certificate of the Superintending Architect of the London County Council, dated October 24, under Sections 22 and 29 of the Act defining the general line of building on the north side of Fawley-road, Hampstead, between West End-lane and Honeybourne-road.

The members of the Tribunal sitting were Messrs. Arthur Cates (chairman), A. A. Hudson, and J. A. Penfold.

Mr. G. N. Freeman, Q.C., and Mr. T. Willis Chitty appeared for the appellants, and Mr. George Wallace, barrister, for the London County Council.

The case for the appellant, as outlined by Mr. Freeman, was to the effect that appellant was under a contract to purchase the freehold of a plot of land bounded on the west by West End-lane and on the south by Fawley-road. The appellant had erected a row of shops abutting on West End-lane, of which the building in question formed part. On April 8 he prepared plans for a building at the corner of West End-lane and Fawley-road, but abandoned the work after erecting a wall. On May 11 appellant gave notice to the District Surveyor of his intention to resume the erection of this building at the corner, but on July 30 the Superintending Architect called appellant's attention to Section 22 of the London Building Act, 1894, and on August 7 he received notice from the solicitors of the London County Council requiring him to desist from building further. Since that date the appellant had not continued the erection of the building or made any alteration in it except that he had demolished a very small portion. The appellant, who then proceeded with the erection of other shops in West End-lane, received notice of an application to the Superintending Architect to define the line of building, and the appellant, by his solicitor, was heard before the Superintending Architect, but the latter refused to regard the reasons submitted to adjourn his decision and gave his certificate defining the general line of buildings. The grounds of the appeal were these:—First, that there was only one row of houses in Fawley-road between Honeybourne-road and West End-lane, and that in order that the general building line of such row of houses should govern the buildings, such buildings would have to be actually situated in such row; secondly, that the contemplated building was not actually situated in that row, but, on the contrary, in a row abutting on West End-lane; thirdly, that consequently the general building line of the row in Fawley-road ought not to govern the building

in question; fourthly, that the Superintending Architect must have issued his certificate on the erroneous assumption that the corner houses are in law situated in two streets, that the houses have not a general building line in both streets, he not having had any plans of the proposed building before him; fifthly, that, having regard to the arrangement with the owner of the land on the south side of Fawley-road and the building already erected on the south-west corner of West End-lane and Fawley-road, it was desirable for the purpose of uniformity that the shop appellant desired to erect should be erected, and so maintain the usual building plan as regards the neighbouring streets out of West End-lane. Mr. Freeman contended that the corner building referred to was situate in West End-lane; that as it was part of a continuous row of houses for commercial purposes, it was entirely different in character to Fawley-road, which was residential property. He also contended that the Superintending Architect had before him insufficient data upon which to make his certificate. He cited the case of Barlow *v.* the Kensington Vestry in support of his case.

Evidence having been given by Mr. C. W. Stevens, architect, and Mr. John Tryon,

Mr. Wallace, for the respondent, contended that, by Section 29 of the Act, the Superintending Architect had the sole power to fix the building line of any street, and the premises of the appellant were really in the Fawley-road. He relied upon the decision in Wendon *v.* L.C.C., where it was held that the mere fact of a wall being erected did not give the appellant the right to carry on the building at any time. It was the duty of the Superintending Architect to get the general line, and the appellant had been subjected to no hardships. Moreover, it would be very inconvenient to have two lines of frontage within a short distance of each other.

The Chairman stated that the Tribunal would consider their decision and announce it at a future date.

BOOKS RECEIVED.

REPORT OF THE TWENTY-SIXTH ANNUAL POOR-LAW CONFERENCE. (P. S. King & Son.)

FIRE-TESTS WITH FIRE-RESISTING CURTAINS and FIRE-TESTS WITH FLOORS. (Nos. 51 and 56 of British Fire-Prevention Committee's Publications.)

THE YEAR'S ART: 1901. (Virtue & Co.)

PROCEEDINGS OF THE INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS. Edited by Thomas Cole, A.M.Inst.C.E. (E. & F. N. Spon.)

Correspondence.

To the Editor of THE BUILDER.

SAXON CHURCHES.

SIR,—The volume of the Anastatic Drawing Society for 1878, edited by Mr. Llewellyn Jewitt, F.S.A., contains a sketch by the Rev. W. F. Francis, of the Priory Barn, Isleham, Suffolk.

The description accompanying the sketch says:—"The ancient building, now called the Priory Barn, was once a church. It consists of a nave, with chancel in the form of an apse. The walls are of Roman brick built herring-bone fashion with clunet and flints. All the windows are very early Norman and extremely narrow. There is a large Norman doorway leading into the nave and a partly square-headed one into the chancel. Perhaps the most remarkable features are inside the edifice, these consist of two stilted or horseshoe arches, the larger one separating the nave from the chancel. It is built of Barnack stone, and very massive. The building is now a repository for straw and waggons and every conceivable kind of agricultural implement."

The sketch does not tally with the description; the nave only shows the Roman bricks, the chancel and its apse shows stone, and there are two courses of stone under the eaves of the nave, as though put there for repair. South door to nave very tall and plain semicircular arched opening.. South door to chancel has a shouldered lintel, or (as sometimes called) "Carnarvon arch," and a spring or water-table runs from the doorway under the sill of the one south window. The apse appears to be a semi-octagon (on plan), and has buttresses in three stages. There is a plinth to the apse, about half-way between the water-table of the chancel and the ground.

The drawing gives one the idea of a Saxon nave, a Norman chancel with early English doorway inserted, and an early English apse; but perhaps the buttresses are a later addition. Will you allow me to ask for information from any architect near to Isleham?

J. M. GETHING.

CHURCHYARDS AND THEIR ACCESSORIES.

SIR,—I read Mr. Crawfurth Smith's paper in your issue of December 29 with much interest; but while I appreciate every effort that is made to improve monumental work, I cannot refrain from writing a few lines in defence of the much-abused monumental mason.

In the first place has Mr. Smith (or Mr. Gething in his letter in your issue for the 12th inst.) hit upon the right man for such severe criticism? As a monumental mason I reply, "No." I am willing to admit that there are good and bad monumental masons, but the majority of those now trading as such, or, as they more frequently style themselves, "monumental sculptors," are not masons at all, being nothing more nor less than undertakers. Who has made these undertakers "monumental sculptors?" I reply, our stone and marble merchants, by departing from their legitimate business of selling raw material to the skilled mason to the importing of ready-made monuments from Italy. I am far from saying that the merchants were the first offenders; others entered the field who knew nothing of material or workmanship and were also supplied from Italy, with the result that the market is full of cheap monuments utterly devoid of taste or beauty. Our cemeteries are full of such outrages, and our churchyards are now being attacked. Fortunately the vicars of many places are alive to the danger and prohibit the erection of these ugly things. A vicar recently remarked to me, "They shall not bring them here; I will not have them. If the public has no taste I have, and I will do my very best to educate the public." Herein lies the gist of the whole matter—educate the public. This is a large order indeed. I have been endeavouring to accomplish this in matters monumental for many years. The fact of the matter is the public are ready to buy from any one who will sell the largest, the most flowery monstrosity (and it must be marble) that can be found, providing only it is cheap.

Now for the remedy. Mr. Gething says "if you cannot design what is beautiful, steal it, but don't produce bad work." Alas, many of the monumental sculptors already referred to need no such advice, for this very "stealing" is one of the greatest curses under which the skilled monumental mason struggles. I have designed memorials which most architects and the educated public do appreciate, the undertaker "steals," attempts to reproduce, and the result is most deplorable. Copy they cannot; I would that they could. Photographs of my original work and of bad copies of the same, taken by travelling photographers and supplied to the undertaker, have been brought to my office with a request that I should furnish an estimate. I produce my original design and estimate; the price is too high. The photograph is sent to Italy and another abortion is produced.

Many will doubtless be glad to attend any meeting of the Institute of British Architects to hear and discuss this matter and to devise some scheme which will give the legitimate monumental mason the place he deserves and protect his designs from this pilfering and mutilation, and thereby encourage those who wish to labour for art's sake and the beautifying of our burial places.

A MONUMENTAL DESIGNER AND MASON.

"COLLUSION AMONG CONTRACTORS."

SIR,—I have read the letter signed by "A Sufferer" in your issue of last week, and as a London builder of some experience I have no doubt that if the writer will publish his identity and come out in the open, there are many others besides myself who will be pleased to take up this discussion. If "Sufferer" cannot give his name, the matter is not worth the trouble of disproving.

F. G. MINTER.

The Student's Column.

SANITARY FITTINGS AND PLUMBING.

3.—GENERAL NOTES ON SANITARY FITTINGS.

THE term "sanitary fittings" is generally taken to include all fittings intended for the reception of the foul liquids and water-carried solids which are produced in and about our buildings, exclusive of trade processes. The term, therefore, excludes such fittings as dyers' and sizers' vats and other tanks employed in factories and work-shops, and is confined to sinks, wash-tubs, baths, lavatories, water-closets, slop-hoppers and sinks, and urinals. Of each class of fitting there are many varieties, which are adapted for different purposes and for different kinds of buildings. The principal varieties will be considered in subsequent chapters. At present it is our purpose to state a few general rules which ought to be applied in the selection of sanitary fittings of all kinds. These rules may be summed up in five words—efficiency, cleanliness, durability, simplicity, and (within limits) economy.

That a sanitary fitting should adequately serve the purpose for which it is intended is obvious, but thousands of fittings are still fixed every year which cannot by any stretch of imagination be regarded as efficient. There are lavatories with waste-holes so small that they cannot be rapidly emptied, with overflows badly arranged, with drains from soap-dishes made only to be choked, and with the "clean" water arranged to enter through the more or less foul waste or overflow openings. Baths exhibit almost the same defects.

There are "water-closets" without water, or so insufficiently flushed that the thorough removal of the solids is impossible. Others are so constructed that they hold very little water, or none at all, for the reception and deodorisation of deposits. And there are unflushed urinals and slop-hoppers. All these perhaps serve in a manner the purpose for which they were designed, but they do not serve it efficiently, and every fitting of this sort is therefore imperfect.

One of the principal marks of efficiency in a sanitary fitting is that it shall form an effective barrier against the entrance of foul air from the drains and waste-pipes. In some fittings—as, for example, lavatories and sinks—this barrier is a plumber's trap which does not form an integral part of the fitting itself, but in many water-closets, slop-hoppers, and baths the trap is part of the fitting, and its efficiency must be carefully considered. Water-closets are often defective in this respect; the water-seal of the trap is, perhaps, too small, and is therefore in danger of being removed by siphonage or evaporation. Or the trap may have no provision for ventilation, a defect which will render it unsuitable for fixing in series.

Cleanliness is a question both of design and material. One of the best materials for sanitary fittings is undoubtedly some kind of porcelain, either solid or applied in the form of an enamel. It has its disadvantages of course,—if applied as an enamel it may chip off and expose the rougher porous foundation to the action of the foul water, and if solid it may (as in a lavatory basin) be cracked by a blow or by sudden contact with hot water,—but it has the great advantage of cleanliness. It is impervious, and consequently can always be kept clean, if the fitting is so designed that every part is accessible. Foul matters will, however, adhere to porcelain as to every other substance, and these must be periodically removed if the fitting is to remain satisfactory. Careful design is therefore necessary. All internal angles ought to be well rounded, and as far as possible every part of the fitting ought to be accessible to the brush or cloth. The overflows of sinks and lavatories have, until recently, been very defective in this respect; no provision whatever was made for cleansing them, and the consequence was that they often became extremely dirty, and were sometimes quite choked with soapy and greasy matter.

Many water-closets still in use are of such a form that they cannot possibly be kept clean by ordinary flushing. The containers of pan-closets are almost invariably coated with filth, and some closets of more recent design are very little better. The traps of wash-out closets are generally more or less foul, and many wash-down closets have such a small area of standing water that the basin is soiled every time the closet is used.

The nature of the flush is often accountable for the uncleanliness of water-closets, urinals, and slop-sinks. The water may be insufficient in quantity, or may be delivered in such a small volume, and at such a low rate of velocity, as to be almost useless for cleansing the basins and traps. In many old closets the water is delivered through a fan-spreader, which cannot possibly distribute it over the whole surface of the basin.

The enclosure of sanitary fittings with wooden casings is fortunately now almost a thing of the past, but it is well to repeat that such casings are, as a rule, most objectionable. It is true that in some recent hospitals cupboards have been formed under the sinks for the storage of bed-pans, but in such cases the windows have been continued down to the floor, so that the cupboards are properly lighted, and air-grates have been fixed in the external walls or windows for ventilation. The panels of the doors of such cupboards ought to be fitted with sheets of clear glass, so that any uncleanliness can be easily detected. Where these precautions are taken the objections to enclosed fittings are considerably

reduced, but it is certainly best to leave the fittings exposed wherever possible, as in nearly every case enclosures are difficult to keep clean and sweet. Certainly the ordinary casings of baths and water-closets are most objectionable, as they conceal the plumber's work, and add considerably to the difficulty of inspection and the cost of repairs. When removing the casing of a water-closet it will often be found that the floor within the casing has been covered with sawdust, and that this is sodden with water and filth; the plumber had evidently thought it a wise precaution to provide some material to absorb the leakage from the defective joints which he had made, and so prevent or delay the detection of his carelessness or incapacity. It is a golden rule to insist on all sanitary fittings, and the plumber's work connected with them, being exposed to view, so that everything can be kept thoroughly clean; exposure also ensures sounder and neater work, renders the detection of leaks more easy, and reduces the cost and dirt of repairs.

As woodwork in connexion with sanitary fittings is not conducive to cleanliness, the tendency of modern sanitation is to reduce the woodwork to the least possible quantity; hence we have cast-iron roll-top baths without enclosures, iron brackets for supporting lavatories, &c., steel seats for water-closets, porcelain-enamelled drainers for sinks, and other contrivances.

It is a mistake to cover sanitary fittings with elaborate ornamentation, either raised or printed or painted. Certainly the parts which are in contact with foul water—such as the internal surfaces of sinks, water-closets, lavatories, and baths—ought to have the surfaces perfectly white or cream-coloured, so that the slightest deposit of foul matter can be easily seen.

Durability is the third quality which sanitary fittings ought to possess. Baths are now generally of cast-iron, and experience has proved that it is a satisfactory material for the purpose. Some of the methods of finishing the surface leave, however, something to be desired. Copper and zinc are also used for baths, the former being the more durable. Salt-glazed or enamelled fireclay is largely used for other sanitary fittings, and is an excellent material if it is thick enough to resist ordinary blows, and if the enamel is thoroughly adherent to the fireclay body; in cheap fittings the enamel is often defective in this respect, and will chip or flake with the slightest rough usage. Indeed, the enamel is often cracked during the process of burning, and all enamelled fireclay fittings ought to be carefully examined for such defects.

The best fittings of moderate size are made of some kind of pottery or whiteware suitably glazed. As the material is more or less brittle, it ought not to be too thin. Many lavatory and water-closet basins are defective in this respect, and are therefore easily cracked. For the tops of lavatories polished marble is a satisfactory and durable material.

Some materials are sufficiently durable, but are unsatisfactory in other respects. Stone, for example, has been much used for sinks, but, on account of its perviousness, it is difficult to keep clean. Even slate, dense though it is, is far from perfect; it has been largely specified for urinals, but the valid objections to the plain polished surface have led to the adoption of various kinds of enamel, none of which, however, is permanently satisfactory—at any rate, for urinals. There is less objection to its use for the tops of lavatories, but even for these fittings some kind of porcelain or enamelled fireclay is better.

Of two sanitary fittings—other things being equal—the simpler ought to be preferred. Elaborate mechanism is out of place in such fittings. The tendency of recent sanitation towards simplicity is nowhere so marked as in the case of water-closets. The pan-closet is universally condemned, and the valve-closet, although its life has been preserved beyond its natural limit by the exertions of one clever writer, is hastening towards oblivion. Simpler fittings have taken their place. The same process can be observed at work in the case of the overflow and waste arrangements of baths and lavatories since the first attempts were made to do away with the old plug and chain and the uncleansable overflow. Complicated arrangements are likely to get out of order and increase the difficulty of keeping the apparatus clean, besides being costly to repair.

Of the last point to be considered—namely, economy—little need be said. In many cases it is one of the most important considerations, but inexpensive fittings of good quality can now be obtained, and it is the architect's duty to see that his client obtains the best fitting possible for his money. Beyond a certain limit, however, economy cannot be safely practised, and the owner of the building ought either to be content to do without the fitting altogether, or to pay for one which is likely to prove reasonably satisfactory.

GENERAL BUILDING NEWS.

NEW CHURCH, BIRMINGHAM.—The foundation-stone of the new parish Church of St. Peter was laid recently by the Right Hon. Viscount Cobham. The site is in George-street West, near its junction with Spring Hill. Plans prepared by Mr. Frank Barlow Osborn provide for a building in the Early Perpendicular style, of red brick inside and out, with Hollington stone arcades, windows, and dressings, and a tiled roof. The west end faces George-street West, with a baptistry projecting from the end of the nave, from which it is approached by an archway. On each side of the baptistry are porches leading into the nave, and at the west end of the south aisle is the tower, which will be 81 ft. high to the top of the parapet. The length of the nave is 95 ft. 6 in., the chancel 38 ft. 6 in., and with the baptistry the total internal length of the church is 145 ft. The width of the nave and aisles will be 54 ft. In addition, there are two shallow transepts, increasing the width to 68 ft. in this portion of the church, each having separate entrances; a chancel aisle on the south side; and choir and clergy vestries, with organ chamber over, on the north side. The seating accommodation will be for over 750 persons on the ground floor level. The church will be lighted by traceried windows, including large ones at the east and west ends. The roof will be open, showing the timbers. Oak will form the seating on the floor. The font from old St. Peter's will be utilised and placed in the baptistry. The cost of the church, including the heating apparatus, but exclusive of the organ, will be 12,900*l.*, and it is expected it will be completed within two years. The contractors are Messrs. W. Sapcote & Sons.

WESLEYAN CHURCH, PENARTH.—Trinity Wesleyan Chapel, Stanwell-road, Penarth, has just been opened. The new building replaces an iron church. The style of the church is Decorated Gothic, the facings being of Newbridge stone with Bath stone dressings. The main dimensions of the building are 101 ft. in length, 78 ft. in width, 34 ft. to the top of the nave roof, and the spire when completed will be 107 ft. high. The principal entrance is at the west end. The porch has a mosaic floor, panelled wood ceiling, and painted glass windows. The interior arrangements of the building include a nave, with side aisles, north and south transepts, and chancel, with the organ chamber adjacent, minister's vestry, and a vestry for the choir, from which access is also obtained to the schools adjoining. The roof is of barrel vault construction. All the windows have traceried heads, and throughout are fitted with stained glass. The pulpit is of oak, and is placed in the nave on the south side of the chancel. The choir stalls are of oak, having traceried panels and poppy head terminations. The space behind the communion rail is floored with marble and mosaic, the other floors throughout being of teak and pine blocks. The means of lighting adopted is the electric light generated on the site; gas also is laid on in case of emergency. The seating is of oak, the floor of the church being formed on a gentle slope. The accommodation of the building is for about 650. The architects are Messrs. S. W. Richards and Henry Budgen, and the contractors Messrs. Jones Bros., of Cardiff. The whole of the coloured windows have been designed and executed by Mr. H. J. Salisbury, of London and St. Albans.

CHURCH, WORMIT, FORFARSHIRE.—A United Free Church has been erected at Wormit to accommodate 400. By the rearrangement of floor space and the insertion of a gallery the building will seat 150 more. It is built of stone, and the entrance is by a flight of steps and a stone porch. The windows are filled with cathedral glass, the lighting is by means of ten brass lamps, and the heating is by hot water pipes. The estimated cost of the building is 3,500*l.* The architects are Messrs. James Maclaren & Sons, and the contractors are as follows:—Builder, Robert Tait, Newport; joiner, W. Buist, Woodhaven; internal brickwork of walls, Luke Linder, Dundee; plasterer, Alexander M'Ritchie; slater, James Laburn & Sons; glazier, Lindsay & Scott; plumbing and heating apparatus, James S. Jack, Newport; painter, D. Mackellar; lamps and tiling for porch, Kirk & Coutts, Dundee; ironwork, William Young, Newport.

GOODALL-STREET CHAPEL, WALSALL. — This chapel was reopened recently after undergoing alteration and restoration. Messrs. Hickton & Farmer were the architects, and Messrs. Brockhurst & Wood the contractors. A memorial window, the work of Mr. Swaine Bourne, of Birmingham, has been placed in the chapel.

RESTORATION OF MACCLESFIELD PARISH CHURCH.—The work of restoration of this church is practically complete, and the opening will take place on Wednesday, April 24. The work has been carried out from plans by the late Sir Arthur Blomfield, A.R.A., and has cost over 20,000*l.*

CATHOLIC CHURCH, OMAGH LUNATIC ASYLUM, CAPPAGH, CO. WATERFORD.—A church has been erected for the Catholic inmates of Omagh asylum. The building is 80 ft. long and 30 ft. wide, and will seat 500 persons. Mr. C. B. Ownes, of Dublin, is the architect. The contractor was Mr. J. Colhoun.

CONGREGATIONAL CHURCH, SUTTON.—The Congregational church at Sutton has recently undergone redecoration, &c., and additional buildings have been added. The work has been carried out by Mr. Shopland, builder, of Sutton, from plans by, and under the supervision of, Mr. Wm. Theobalds, architect, London.

BOARD SCHOOLS, WREXHAM.—The Victoria Board Schools at Wrexham were opened on the 1st inst. The architect was Mr. W. Moss, of Wrexham, his plans having been selected in competition. Mr. W. E. Samuel, of Wrexham, was the contractor; and Mr. W. L. Walker, the clerk of works. The schools accommodate 1,000 children and have cost nearly 15,000*l.*

BOARD SCHOOL, BINGLEY, YORKSHIRE.— A new infant school has been erected by the Bingley School Board in Belgrave-road, Bingley. The building, which is of stone, will accommodate 230 children, and is divided into an assembly-hall, with four classrooms, arranged in pairs. The main room is 47 ft. 9 in. by 16 ft., and two of the classrooms each measure 22 ft. square, the third 21 ft. 3 in. by 26 ft., and the remaining one 20 ft. by 23 ft. The heating is by hot-water on the low pressure system, and there is also a fireplace in each room. The ventilation is effected by Tobin's inlet tubes and ridge extractors. The woodwork is of pitch pine. The playground is provided with a covered shed. The cost of the school, exclusive of land, has been 2,600*l.* The work has been carried out by the following contractors, under the superintendence of Mr. W. R. Nunns, the architect:—Masonry, Mr. R. Wood; joinery, Mr. J. Greenwood, Crosshills; slating, Mr. W. Thornton; plumbing, Mr. M. Brown; plastering, Messrs. H. Spurr & Son; painting, Mr. J. W. Anderson; heating apparatus, Mr. T. Mears, Bradford.

NEW BOARD SCHOOLS, SOUTHAMPTON.—The Central District Board Schools at Southampton were formally reopened last week. The schools have undergone extensive alterations and additions. The original school for boys and girls was a two-story building accommodating 598 children, and the infants' school was a one-story building accommodating 300, or a total of 898. In order to avoid buying a site for another school, to cope with the increased accommodation required, a daring and somewhat novel proposition was agreed to: the roofs have been raised and the necessary accommodation provided in that way. The boys' and girls' school has had an additional story put on, making it a three-story building, and the infants' school has had an additional two stories put on, and the two buildings have been coupled together, making one high building, the infants being on the ground floor, the girls on the first floor, and the boys on the top floor. The roofs were lifted bodily and the work carried up to them. The area of the boys' and girls' school roof was 3,900 ft., and the infants' school, 2,300 ft. The increased accommodation given is for 759 children, or a total, now the building is complete, of 1,657. The total cost of the additions, including furniture and contingencies, is 11,352*l.* The work was carried out without the slightest mishap to the roofs. The architect was Mr. John H. Blizard (Messrs. Lemon and Blizard), and the clerk of works, Mr. S. Jurd. The builders were Messrs. H. Stevens & Co. of Southampton.

SCHOOLS, HASTINGS.—The new schools at St. Helen's, opposite the Hastings Borough Cemetery, have just been opened. Accommodation is provided for mixed and infants' departments. The building comprises two floors, with covered playgrounds, and a heating chamber under a part of the ground floor. The site is about an acre in extent. At present the ground floor is used as an infants' school to accommodate 190 infants. On the first floor is the mixed school to hold 260 children. There are teachers'rooms in both the infants' and mixed schools. These rooms are in each case on a level with a dais, and by throwing back the folding doors this can be converted into a platform, to be used in connexion with the central halls when they are required for public meetings. The building is constructed of red brick, with moulded red brick facings on the front and sides, the back being perfectly plain, and the roof is covered with red tiles. The buildings were erected by Mr. T. T. Denny, of Walmer, Kent, and Mr. Arthur Wells was the architect. The heating arrangement and boiler were supplied by Messrs. Upfield & Sons, of Hastings. The amount of the contract for the erection of the buildings was 9,755*l.*

BOARD SCHOOLS, MORLEY.—The new schools which have been built by the Morley School Board in Victoria-road were opened recently. The build-

ing, which, with the site, has cost about 9,500*l.*, provides accommodation for 500 children in the mixed department and 240 in the infants' department. The schools, which are in the classical style, have been erected on the central hall principle, and are in two portions, the classrooms (eight in number) being grouped round the central hall, the entrance to which is approached by corridors 9 ft. wide. Local stone has been employed, and the woodwork throughout is in varnished pitch pine. The architects were Messrs. T. A. Buttery and S. B. Birds, of Morley.

THE PLYMOUTH ATHENÆUM.—The new buildings which have been added to the Plymouth Institution have just been opened. They consist of a reading-room, library, and other rooms. The new buildings have been designed by Mr. A. S. Parker, architect, Plymouth, whose designs were selected in competition. The front is treated in the Grecian style of architecture, in continuation of the style of the original building, which was designed by Mr. Fulston, of Plymouth, in the early part of the past century. The entrance is adorned with fluted Doric columns on either side of a recessed portico. The entrance doors are wide, with bevelled-edge square plate panels. They lead into an entrance hall, 18 ft. square, the staircase hall and alcoves for the display of antiquities branching therefrom. The hall floor is on a level with the museum gallery, and there is a circular junction with the old buildings at the north-west corner. The reading-room is 30 ft. by 24 ft., and 18 ft. 6 in. high, fitted with electric lamps. The library, 33 ft. 6 in. long, by 24 ft. 6 in. wide, and 24 ft. high, has a stained open roof. A council-room leads from the hall and library. Opposite the entrances the main staircase leads to the ground floor of the museum, this forming the main connexion between the new and the original buildings. Ladies' and gentlemen's cloak rooms and a photographic dark-room complete the accommodation of the extension. The building and fittings have been carried out by Mr. G. P. Turpin, contractor, of Plymouth, and the heating apparatus, both for the old and the new buildings, has been fitted by Mr. W. T. Hocking, while the electric-lighting has been carried out by Mr. W. E. Heath.—*Western Mercury.*

IMPROVEMENT OF THE LEEDS TOWN HALL CRYPT.—An improvement in the access to the crypt of the Leeds Town Hall will be completed, from plans of the City Engineer, for the Lord Mayor's ball on the 24th inst. Instead of the narrow steps by which guests formerly reached the supper-room from the George-street corridor, a proper staircase leading from the ante-room forming the east entrance to the Victoria Hall is being provided. It will have a central main flight, and will divide halfway down into a right and left staircase. At the foot of these staircases there will be a crush-room, with large folding doors opening into the crypt. Besides, the crypt has not only been provided with an electric installation, but converted into quite a lofty hall by lowering the floor.—*Yorkshire Post.*

NEW BUILDINGS, EXPERIMENTAL FARM, GARFORTH, YORKSHIRE.—At the Manor Farm, Garforth, where, under the auspices of the County Councils of the West and East Ridings, educational work is being carried on as a department of the Yorkshire College, the new buildings are now almost ready for occupation. These are to be devoted to practical instruction in agriculture and kindred industries. There are two sections. One comprises the dairy, including rooms for separating, churning, making-up, packing and delivery, and cold storage. The other has on the ground floor a lecture-room, the board and professor's room, male students' sitting-room, &c.; and on the first floor a laboratory, a classroom, a bacteriological-room, a female students' sitting-room, &c. In the basement are the heating apparatus and the boilers. The buildings, which cover an area of about 100 ft. by 30 ft. are lighted by electricity. The new buildings have been erected from designs by Messrs. Smith and Tweedale, architects, Leeds.

NEW HOTEL, STORNOWAY, SCOTLAND.—Estimates have been accepted for the erection of a new hotel in South Beach-street, Stornoway, and the site is now being cleared of existing buildings. The building will contain twenty letting bedrooms, large commercial-room, dining-room, drawing-room, smoke-room, &c.; and there will also be a restaurant on the ground floor. The stones for dressed work of the front elevation will be from Newton Quarry, Elgin; the other building material will be of local rubble, and the rear dressings of Granolinth. The sanitary fittings will be by Mr. Leslie Hall, of Glasgow; the grates and tiles by Messrs. Bannochie, of Aberdeen; and the wood fittings by Messrs. Garvie, of Aberdeen. The building will be carried out from designs and under the superintendence of Mr. R. B. Pratt, Elgin, at a cost of 5,500*l.*, by the following contractors:—Masonry, Messrs. Ross & McKenzie, Stornaway; carpentry, Messrs. Ross & McKenzie, Stornaway; plumbing, Messrs. Ross Brothers, Elgin; slating, Messrs. Fraser & Thompson, Elgin; plastering, Mr. S. Macrae, Inverness; painting, Messrs. McKenzie & Son, Stornaway.

PUBLIC HALL, GRANGE-OVER-SANDS.—The new public hall at Grange-over-Sands was opened on the 1st inst. The building has been erected at the rear of the new Council offices and bank premises in Main-street. The materials used were local limestone and Prudham freestone dressings. Mr. John Hutton, of Kendal, was the architect, and the following were the contractors:—Masonry, Mr. Enoch Denny; carpentry and joinery, Mr. Wm. Till; slating and plastering, Mr. John Chippendale, jun.; plumbing, Mr. Benjamin Ward; painting and glazing, Mr. J. W. Braithwaite; all of Grange. The heating and ventilating were carried out by Messrs. John King & Co., of Liverpool.

TOWN HALL, KEIGHLEY.—The members and the officials of the Keighley Town Council have entered into possession of the new offices—now called the Town Hall—which have been erected in Bow-street, in the centre of the town. The new structure is 133 ft. in length, with a width of 33 ft., and there are four floors from the ground level, the height to the eaves being 48 ft. The basement is divided into a number of storerooms and a room for the heating apparatus. On the ground floor, entering from the public door in Bow-street, the first room is given up to the Borough Treasurer's department, with a pay counter and pay windows. The clerks are accommodated behind the pay counter in a room 52 ft. by 23 ft. in extent. Next come a private room for the borough treasurer, two rooms for the town clerk, and other rooms for the sanitary officials, the medical officer, and the water superintendent. The mayor's rooms are on the first floor, and comprise a parlour with an oriel window, the room being 28 ft. by 18 ft. in size, a private room overlooking Bow-street, and an anteroom on the other side. The remainder of the floor is taken up with a range of rooms for the surveyor's department and two committee-rooms. The second floor is utilised for the council chamber and supplementary rooms. Occupying a corresponding position to the mayor's rooms are a retiring-room and a robing-room; then comes a dining-room, and at the north end is the new council chamber. This room is 35 ft. by 30 ft. The walls are panelled to a height of 12 ft. The arrangement of the rooms on the third floor is similar to that of the lower floors, but at present—with the exception of the kitchen—these rooms will not be used, though they will be available for extensions. The building is heated throughout with hot-water radiators on the low-pressure system. The lighting is by electricity, which, until the Corporation's works are ready, will be furnished by the Fleece Mills Company. The building, including furnishing and electric lighting, has cost about 10,000*l.* Mr. John Haggas, architect, is resposible for the external design, and the internal arrangements were planned by Messrs. J. B. Bailey & Son, architects, Scott-street, Keighley. The contractors have been as follow:—Masons' work, Mr. Thomas Moore, Keighley; joiners' work (including furnishing of treasurer's, health, and surveyor's departments), Mr. Ineson Taylor, Lees; slaters' work, Messrs. T. Nelson & Sons, Bradford and Keighley; plasterers' work, Messrs. Bradley, Krischke, & Co., Bradford; plumbers' work, Mr. J. Jackson, Keighley; iron work, Mr. Thomas Moore, Keighley; painters' work, Messrs. Tillotson & Harrison, Keighley; heating, Messrs. Bailey & Clapham, Keighley; electric lighting, Messrs. G. H. Woods & Co., Blackburn; and furnishing of the mayor's and retiring rooms and the council chamber, Messrs. Simpson & Sons, Limited, Halifax.

TOWN HALL, ENNISKILLEN.—The new Town Hall at Enniskillen was opened on Monday by the Countess of Erne. The building is situated on the Diamond, an elevated portion of the island on which the town is principally built, and the cost of its erection amounted to a sum of about 11,000*l.* The building is Renaissance in style, and the area which it covers is 9,070 square feet. Limestone from the local quarries has been used in the construction of the walls, together with brick, and the exterior is faced with punched stone, from the Carrickeragh quarries, which are situated on the shores of Lough Erne. Dungannon chiselled sandstone has been used in the mouldings, pilasters, columns, and cornices. The main entrance from Townhall-street is flanked by pilasters and columns, supporting an ornamental balcony, which is reached from the corridor on the first floor level, and surmounting the building is a tower containing four angled turrets terminating in a dome with finials, &c. On the basement floor there are caretaker's apartments, and advantage has been taken of an inclination in the site to arrange them principally overground. Provision has been made for cooking for public banquets, and there are also a storeroom and an engine-room containing all the fire-brigade appliances. On the ground floor there are two entrances, the main one being in Townhall-street and a side one in Water-street. The main entrance is flanked by the town clerk's office and the chairman's parlour on one side, and by a reading-room and a book store on the other. From the clerk's office on the left of the entrance there is a flight of stone stairs leading to the strong room in the basement of the tower, and there is communication through the chairman's parlour with the council chamber. A minor hall, 35 ft. by 31 ft., occupies a portion of the structure facing Water-street. It is fitted with a moveable platform, and will be for small meetings or entertainments. Off this hall there is a committee-room, divided by moveable partitions. Over the suite of municipal offices there is the assembly hall, which is reached from the ground floor by a staircase This room is 29 ft. high and is entered by four doors running along the corridor. Messrs. Anthony Scott & Sons, of Drogheda, were the architects, their plans having been selected in competition, and placed first by the assessor, Sir Thomas Drew. The general contractor was Mr. James Harvey, Enniskillen. Messrs. Musgrave & Co., Belfast, supplied the heating apparatus. The stone carving was executed by Mr. Hart, of Brookeborough.

WORKHOUSE INFIRMARY, SKIPTON, YORKSHIRE.—A new infirmary, adjoining the Skipton Union Workhouse, was opened on the 12th inst. Mr. Hartley is the architect.

TRINITY HOSPITAL, LEICESTER.—This old building is being demolished to make room for the new hospital. Some part of the building will be retained and incorporated in the new building. Mr. J. Goodacre is the architect.

SANITARY AND ENGINEERING NEWS

DOCK SCHEME, BRISTOL.—As the result of a citizens' poll, Bristol has decided to promote a Bill next Session for powers to construct a new ocean dock at Avonmouth, capable of accommodating the largest vessels afloat, at a cost of just under 2,000,000*l.* Fully 60,000 papers were issued, and 40,000 collected. Of these 13,000 were unsigned. There were 25,000 votes for the Bill and 9,000 against. Sir Wolfe Barry and Sir Benjamin Baker recommended the proposed dock, which will take five years to construct.

OSSETT SEWAGE.—The scheme of extension at the Healey outfall is now approaching its last stage. It was sanctioned by the Local Government Board without any alteration or suggestions. Possession of the land has been got, and the Corporation have instructed Messrs. Malcolm Paterson and Sam Shaw, MM.Inst.C.E., who are joint engineers, to prepare for letting the contracts. The works consist of three miles of intercepting sewers, new tanks, buildings, machinery, storm-water filter, and land filtration beds, and the engineers' estimate, inclusive of land, is about 10,000*l.* It is expected that the works will be let before the middle of March.

BURLEY-IN-WHARFEDALE WATERWORKS.—The arbitration in respect of the acquisition of Mrs. Crofton's two reservoirs and water rights on Burley Moor, near Ilkley, was concluded a few days ago. The case was peculiar in its complications, and the methods of valuation adopted by the two parties illustrated two totally different principles. The claimant's engineers assumed that their client was in the position of a vendor of water with power to sell in bulk to competing authorities, and assessed the claim, which included manorial rights, at 11,000*l.* On the other hand, the Council Engineers contended that there was no power to sell or even divert the water, but merely to impound it up to, and no further than, the present capacity of the reservoirs, which are encroachments on a common with rights gained by prescription only, and to turn such water into the stream bed. They therefore assessed the compensation for the reservoirs and water rights on the basis of the rental received and user at the claimant's mill, amounting to about 26*l.* or 28*l.* yearly, arriving at a total sum of 800*l.* or 900*l.* only. This, they maintained, was the true principle as laid down by the Lands' Clauses Acts, namely, the value to the claimant at the time of transfer. They also denied the existence of competition, even if there were power to sell water. The umpire was Mr. T. T. Wainwright, of Liverpool, and the arbitrators Messrs. T. Fenwick and Geo. H. Crowther. The claimant's case was led by Mr. H. Johnson, C.E., and the Council's case by their Engineer, Mr. Malcolm Paterson, C.E.

STAINED GLASS AND DECORATION.

CAIRD MEMORIAL WINDOW, GLASGOW UNIVERSITY.—On the 12th inst., the window which has been erected in the Bute Hall of Glasgow University to the memory of the late Principal Caird, was unveiled. The window was designed by Mr. Dearle and executed by Messrs. Morris & Co.

FOREIGN.

FRANCE.—M. Mercié has completed the statue of Alfred de Musset for the Place du Théâtre Français in Paris, originally undertaken in collaboration with Falguière, but the delivery of the work is subject to the result of legal proceedings between M. Osiris, who commissioned the work, and M. Mercié, who now demands a higher price for the work than that originally agreed upon.——At the Gobelins a large tapestry is to be taken in hand for the decoration of the Mairie of the XIIIth Arrondissement; it is to represent the apotheosis of Colbert, and is from the designs of M. Jean Paul Laurens.——M. Charles Meissonier has presented to the Bibliothèque Nationale six original copperplates engraved by his father.——It is proposed to suppress the penitentiary establishment which now occupies the beautiful Château Gaillon, one of the finest ancient buildings in the department of the Eure.——The death is announced, at Lyons, of Jean Baptiste Poucet, the

painter, who was a pupil of Hippolyte Flandrin. Among other works, he engraved, for the City of Paris, the fine paintings by his master which decorate the church of St. Germain des Prés.——The death is also announced, at the age of fifty-three, of the painter Georges Moreau de Tours, pupil of Cabanel. He leaves behind him some important military pictures painted with great power of conception and composition. He had obtained a silver medal in the Exhibition of 1889, and a gold medal in the recent Exhibition. He was a member of the Société des Artistes Français (old Salon), and most of his larger works had been purchased by the State—among them "La Drapeau," which is at the Elysée Palace, and the "Mort de Vaneau," which is at the École Polytechnique; "La Famille," and the "Sacrifice à la Patrie," at the Mairie of the Second Arrondissement; the "Vive la France" (Dinan Museum), and the "Hypnotisés" (Reims Museum). ——We have also to record the death, at the age of sixty, of M. Ernest Bardon, architect to the department of Corrège, and President of the Société Regionale des Architects du Limousin, Périgord.

GERMANY.—Extensive canal construction is about to be made in Germany. At the opening of the Prussian Landtag on Tuesday the 8th inst., it was announced in the speech from the throne that what is known as the Canal Bill is to be brought in during the present session, and there seems to be no doubt of its passing into law as the schemes have, on the whole, been favourably received. The bill comprises not only the Rhine-Elbe canal scheme, but provides for the construction of a water-way for large ships between Berlin and Stettin, a better water-way between the Oder and the Vistula, the further regulation of the Warthe, an improved regulation of the tide on the Lower Oder and Lower Havel, and the amelioration of navigation on the river Spree.——The scarcity of dwelling-houses in many parts of Prussia is also engaging the serious attention of the authorities, and the construction of better roads is under consideration.

BULGARIA.—An important archæological discovery has been made at Aboba. During the past year excavations have been carried out under the direction of M. Uspenski, chief curator of the Russian Archæological Institute at Constantinople, on the site of what was believed to have been an ancient military camp. This has now been shown to be the remains, not of a camp, but of a town which was the residence of the earliest Bulgarian rulers, and was probably destroyed in the ninth century. In the centre of the remains, the ruins of a large castle and traces of a fine cathedral have been brought to light. The castle, together with the churches and buildings for the court officials, were surrounded by a double stone wall, and the whole town was protected by a trench.

CANADA.—Canadian architects have been intensely disgusted by a recent circular emanating from the authorities of the Toronto Industrial Exhibition. It appears that the authorities have invited architects to submit competitive designs for a new main building and several subsidiary buildings to be erected on the exhibition grounds to meet the requirements of the proposed Dominion Exhibition next year. The cost of the main building is estimated at 106,000 dols., and of the lesser buildings from 5,000 dols. to 15,000 dols. each. Indignation is felt on the ground that the author of the accepted design for the main building is to be awarded a prize of only 250 dols., and smaller buildings in proportion, seeing that plans, elevations, perspective, and a brief specification are to be provided, the premium is regarded as inadequate.

MISCELLANEOUS.

PRIMITIVE METHODIST CHAPEL, BACKWORTH, NORTHUMBERLAND.—A Primitive Methodist Chapel has just been opened at Backworth. It accommodates 300 persons, and was designed by Mr. J. R. Nicholson, and erected by Messrs. Bolam & Davison, of Birtley.

CALVARY, EAST BOURNEMOUTH CEMETERY.—A large Calvary has been erected in the Catholic portion of the new cemetery at East Bournemouth. The Calvary is of granite from Dartmoor, and consists of steps on a cairn of rough granite, upon which is a monolith over 12 ft. in height, the upper part of which is formed into a wheeled cross. The work was designed by Sir Francis L. J. Barrow, Bart., and executed by Messrs. Harry Hems & Sons.

GLASGOW ARCHITECTURAL CRAFTSMEN'S SOCIETY.—A meeting was held on the 11th inst., Mr. Alex. Davie, president, in the chair, when a lecture entitled "An Architectural Craftsman's Visit to Italy" was delivered by Professor Gourlay. The lecturer began by recommending all architectural craftsmen to make at least one visit to the Continent, though for a short time only, to enable them to realise their insular position, and, further, as an incentive to reading and study. Whether disappointed, satisfied, or exalted feelings pervade one when studying a building on the spot, the result of the study of worthy buildings either at home or abroad is to inspire the student to greater excellence in his future work than he has gained in the past. Beginning with Venetian architecture, a bird's-eye view of Venice was shown on the screen, and the many parts of the city and its buildings were pointed out. Thereafter, views of buildings showing Byzantine, Gothic and Renaissance work in Venice, Ravenna, Verona, Milan, and Vicenza were shown. Passing to Tuscany, the Romanesque, Gothic and Renaissance architecture of Florence, Siena, Pisa, Pistoja, and Prato were reviewed. Finally, the ancient, early Christian and Renaissance architecture of Rome.

NEW ACQUISITIONS AT SOUTH KENSINGTON MUSEUM.—At the death of Mr. Henry Vaughan some valuable works of art passed by bequest into the South Kensington Museum collections. An Italian late fifteenth-century bas-relief in white marble of a female head and bust in profile is one of the most important items. The examples of carved woodwork include a walnut frame attributed to the Barili, uncle and nephew, who worked at Siena and Rome in the early years of the sixteenth century; two Italian carved walnut mirror frames, and several panels of French workmanship dating from the brilliant period of François I. Two large studies in oil by J. Constable, R.A., for many years on loan at the Museum, were included in this bequest, as well as two drawings by Turner, placed, with the other water colours by the same artist, in the galleries. A representative collection of lace, amounting to 114 pieces, has been recently given to the Museum by Mrs. Ambrose Rathborne. It fills three small cases, placed at the south-west corner of the loan court. Of Venetian raised or "rose-point" lace of the seventeenth century there are five borders, and there are also two pieces of black needlepoint lace from Italy. In the same case is a fine needlepoint falling collar, of the middle of the seventeenth century, with raised flowers. There are also examples of the somewhat later needlepoint laces of Alençon and Argentan. Several specimens of Flemish pillow-made lace of the seventeenth century, and borders from Brussels, Mechlin, and Valenciennes, of the eighteenth century are also included in this collection, together with examples of fine white silk lace of Normandy, the "blonde de Caen," the production of which has now almost quite died away, giving place to machine-made imitations. There are one or two specimens of English and Irish laces of our own time.

ELECTRIC LIGHTING BOARD SYSTEM.—We spoke with approval, some little time since, of this system of electric lighting, known for brevity as the "E.L.B." system. It was then exhibited as a demonstration; but we learn that the system has been put into practical operation on a large scale in producing the effects in the Palace of Glass scene in the Drury Lane pantomime, and in the ballroom scene at the Hippodrome.

SOUTHWICK, DURHAM.—There being seven or eight places in the United Kingdom bearing the name of Southwick, as well as another recently created urban district of that name, the Southwick Urban District Council in the County of Durham, with the consent of the County Council, decided at a meeting on the 3rd inst. to change the name from that date to "Southwick-on-Wear Urban District Council," and the name of the place to "Southwick-on-Wear." The object is to prevent a continuance of the miscarriage of, and delay in delivery of, letters, parcels, and goods.

MASTER BUILDERS' ASSOCIATION DINNER, HEREFORD.—The Hereford and District Master Builders' Association held their fourth annual dinner at the Mitre Hotel, Hereford, on the 10th inst., Mr. Lewis Hodges (President of the Association) presiding. After the loyal toast, which was given from the chair, Mr. Ramsden proposed "The Town and Trade of Hereford," and both Alderman Beddoe and Mr. Protheroe replied.—Mr. A. J. Corner gave the toast of "The National Association," coupled with the name of Mr. A. Krauss, of Bristol, who, he understood, would very soon occupy the highest post that the National Association could confer, and who had given time, brains, ability, and a great deal of money towards bringing the National Association to the position it now occupied.—Mr. Krauss, in response, congratulated the Hereford Association on its flourishing and peaceful condition. Speaking of the relations between engineers and contractors, he said his experience was that the more friendly terms they were on the better was the work done. He mentioned that the representatives of the four federations had held a meeting to discuss the affiliation of the National Association of Master Plasterers and closer relations with kindred associations. After a lengthy discussion, they arrived at four distinct points on which they would welcome kindred associations—(1) that we cannot recognise any members except they are affiliated to their local associations; (2) rule 3 to be admitted; (3) no one to be admitted if he is a member of a trades-union; (4) no monetary bond to be required. It came out that some plasterers and joiners belonged to some of the associations and also to the trade society. This could not and must not be, as a man could not serve two masters. There was to be a meeting to meet the kindred associations, and a good result was hoped for.—Mr. W. P. Lewis, sen., in giving the toast of "The Architects and Surveyors of Hereford," stated that they used to be troubled very much about the contract forms, but since they had adopted the contract form approved of by the Royal Institute of British Architects and the National Association of Master Builders, things had been much more satisfactory. Twenty of these forms had been sold by their secretary during last year. In this form there was an arbitration clause, which was chiefly what they had been asking for, and also a strike clause. One little clause the builders got in their specifications generally, was as to the details that were to be provided thereafter. By the new contract form, if the builder considered these details to be excessive, and failing agreement about them with the architect, he could refer the matter to an arbitrator. He did not think there was a man who would not say such an arrangement was fair and just. The toast was coupled with the names of Mr. E. H. Lingen Barker, Mr. John Parker (City Surveyor), and Mr. E. G. Davies.—Mr. E. H. Lingen Barker replied, and said as to the form of contract he did not think architects were competent enough to decide all points, and apart from that he did not think they were the proper persons to do so, even if they were competent; therefore a reference to a person entirely outside the work was most desirable. As to the relations between masters and men, the men were apt to tell the masters and accuse them most unjustly of taking all the benefit that arose from low wages, but this was not so. Builders put, and very properly put, an extra price on to their contracts, if they had to pay their men more money, and the consequence was the building public hesitated to build. He had four works in various parts of the country at the present time absolutely waiting because the price of building was too high. These people would not go on with the building because they told him they could not find the money, seeing that building prices were raised 25 or 30 per cent. It had occurred to him what a desirable thing it would be if they could in some way or other enlighten working-men, because many of them were misinformed as to the real state of the matter. If they knew that the fact of asking for higher wages would prevent builders carrying out their contracts, and so employing them, thinking working men would hesitate before they pressed these demands on the masters.—Mr. John Parker also replied, and said the authorities had been able to get the builders to rise to the proper point in erecting substantial and sanitary houses. Mr. E. G. Davies having also spoken, Mr. Gilbert Davies submitted the toast of "The Hereford and District Master Builders' Association," and said the society existed for the purpose of preventing these unfortunate disputes which had so long disgraced the country.—The President stated that as one looked back over the past one could not help feeling surprised that the master builders of Hereford had existed so long unassociated. They did not set themselves up to defy the men, but if they could not settle matters in a reasonable way they meant to stand their own ground, which they could not do before the Association was formed. Mr. J. Davies proposed "The Guests," and Messrs. H. C. Beddoe and A. J. Corner responded.—Mr. T. A. King proposed "The President and Officers," the toast being acknowledged by the President (Mr. Hodges), the Treasurer (Mr. William Bowers), and the Secretary (Mr. W. P. Lewis, junr.).—Mr. C. Cooke thanked the members for having elected him to the position of vice-president for the ensuing year.

INTERNATIONAL BUILDING TRADES EXHIBITION.—This exhibition opens on April 17, and will continue open until the 27th. It is stated that it promises to be larger and more varied than the previous one of 1899. A special feature will be a section devoted to fire prevention materials, which is being held under the direction of the British Fire Prevention Committee. It will include exhibits by firms manufacturing specialities in the way of non-combustible materials, and a number of exhibits will be on view that have been under the very rigid tests of the Committee. The Smoke Prevention Committee, under the chairmanship of Sir Wm. Richmond, R.A., will hold an exhibit of appliances. A further feature of interest will be an exhibition of drawings by architects.

COUNTY COUNCIL TECHNICAL INSTITUTE, SHOREDITCH.—A day school for boys who propose to enter some branch of the cabinet-making, joinery, or other woodworking trades will be opened in the London County Council Shoreditch Technical Institute on January 22. Among the subjects of study to be included are:—Arithmetic and mensuration (general); geometry and geometrical drawing; freehand and model drawing; modelling in clay; technology of woods and tools (notebook lessons); bench work (use of woodworking tools), &c. Second and third year courses will be provided, and in the third year a somewhat higher degree of specialisation will be permitted. The Institute is well equipped with classrooms, drawing offices, art studios, and shops for cabinet-making and manual training in woodwork, carving, upholstery, polishing, and other branches of the furniture trades, while laboratories for physics and experimental mechanics and for practical chemistry are being provided, and will be completely equipped in the course of a few months. The school will at first be under the control of Mr. S. Hicks, who holds a certificate of the Board of Education as a trained teacher, and of an instructor who is an efficient foreman cabinet-maker, besides being a registered teacher of the City and Guilds of London Institute, with an Honours qualification. The services of additional teachers, especially in experimental science, will be secured

as required. The object of the school is to enable boys who intend to enter some branch of the furniture or other woodworking trades to continue their general education, and at the same time to acquire such a knowledge of the artistic principles of design, and of the scientific principles of construction, of the properties of materials, and of the use of tools, as will enable them at the end of a two or three years' course to enter a workshop with a full appreciation of the points to which they are expected to direct their attention, and with an intelligence so trained as to make them immediately of substantial value to an employer.

CAPITAL AND LABOUR.

EMPLOYMENT IN THE BUILDING TRADES DURING DECEMBER.—The *Labour Gazette* for January reports that employment in the building trades declined in all branches during December. The percentage of unemployed union members among carpenters and plumbers at the end of the month was 4·2, compared with 3·3 in November. The percentage for December, 1899, was 2·5. The London report is as follows:—The building trades are not so well employed, though but little change has taken place during the month. Returns from 188 branches of eight unions paying unemployed benefit, with a membership of 13,787, show that 522 (or 3·8 per cent.) were unemployed, compared with 3·7 per cent. in November, and 0·8 per cent. in December, 1899. The carpenters and joiners and stonecarvers describe employment as quiet; the bricklayers, stonemasons, and painters and decorators as dull; the plasterers and plumbers as bad. The single dispute which commenced during the month was at Blackpool and St. Annes, and affected 208 carpenters and joiners. It was in reference to a proposal of a reduction in wages of 1d. per hour. No settlement has been reported

HALIFAX BUILDING TRADE DISPUTE.—On the 14th inst. the joiners in the employ of one of the Halifax building firms, who have been on strike 105 weeks, returned to work, a settlement having been effected through the medium of the Halifax Building Trades Federation. The agreement involves concessions on both sides. The employers concede ½d. per hour advance and an allowance for the grinding of workmen's tools, and the men consent to a modification in the employers' favour of rules 3 and 4. The terms of agreement are to extend to the whole of the operative joiners in the district. One of the items is that there shall be an annual October conference of masters and men, at which all trade questions shall be considered.—*Sheffield Telegraph*.

LEGAL.

DISPUTED LIABILITY FOR DRAINAGE WORK.

IN the Westminster County Court recently, his Honour Judge Lumley Smith, Q.C., tried the case of Coomber *v.* Somerset, in which the plaintiff, who is the landlord of premises known as 79, Upper Gloucester-place, Regent's Park, sued the defendant, his tenant, who held the premises under a lease, to recover the sum of 45*l.* in respect of drainage work which was carried out by the order of the Marylebone Vestry.

Mr. Longstaffe (barrister) appeared for the plaintiff, and Mr. Spokes represented the tenant.

In opening the facts of the case, the plaintiff's counsel said the question involved was one of considerable importance as between landlord and tenant, as to which of them were liable to pay for drainage work carried out to the order of the Vestry Authorities. The premises in question were let to the defendant under a lease dated May 24, 1894, and there was a clause in it by which the tenant undertook to pay all rates, taxes, assessments, charges, and outgoings, and it was upon the latter word that the present action was based. On May 4, 1900, a notice was left at the house by the Marylebone Vestry, requiring certain work to be done to the drains, but the defendant refused to have it carried out, and consequently the plaintiff, in his capacity of landlord, was bound to have it done, and he now sought to recover the amount from his tenant.

The plaintiff was called and gave evidence in support of his counsel's statement.

Mr. Gorlist, the Sanitary Inspector to the Borough of Marylebone, was called, and said the work which was carried out was absolutely necessary as the drains were old fashioned and very imperfect, and constituted a nuisance within the meaning of the Act.

For the defence Mrs. Somerset was called, and said that during the whole time she had been in the house she had never noticed any bad smells, or suffered any inconvenience or injury to health, although she and her daughter slept in the basement.

The learned Judge, after hearing a lengthy argument on both sides, and having consulted a number of authorities on the point, said he thought he was bound by the case of Rawlins *v.* Briggs, 3 C.P.D., and gave judgment for the defendant with costs. He would, however, he said, grant a stay of execution for fourteen days to give the plaintiff an opportunity of lodging notice of appeal.

ACTION BY A PAINTER'S WIDOW UNDER THE WORKMEN'S COMPENSATION ACT, 1897.

THE case of Dredge and Another *v.* Conway, Jones, & Co., came before the Court of Appeal, composed of the Master of the Rolls and Lords Justices Collins and Stirling, on the 11th inst., on the application of the plaintiffs for leave to appeal from the award of the County Court Judge of Gloucester in favour of the defendants, the masters, under the Workmen's Compensation Act, 1897.

Mr. Ruegg, Q.C., and Mr. Morton Brown appeared in support of the application; and Mr. Arthur Powell opposed it.

Mr. Ruegg stated that the plaintiff was the widow of a painter, and the learned County Court Judge had given leave to appeal, and had assessed the damages the plaintiff would be entitled to if the Court of Appeal took the view that her husband came within the benefit of the Act at the time that he met with the accident. The judgment the plaintiff desired to appeal against was dated November 20 last, and the time for entering the appeal expired on December 11, or twenty-one days from the date of the judgment. The solicitor who represented the plaintiff at Gloucester had asked for a stay of execution in order to see what was best to be done in his client's interest, and the County Court Judge stayed execution for two months. The solicitor erroneously thought that the stay for two months enlarged the time for putting down the appeal, and it was not until December 19 that a consultation was arranged with counsel to advise whether the appeal should be proceeded with. He (Mr. Ruegg) had pointed out that the time for appealing had gone by, and, as he advised the appeal, this application to extend the time was made on the earliest opportunity. Their Lordships would remember that they had held that repainting a house from a ladder was neither work of "construction or repair," and in that case that the masters were not "undertakers" and liable to pay compensation to the workman's representatives.* The House of Lords, however, reversed that decision, and had held that the words "construction, repair, or demolition of a building" covered every class of work which could be done to a building by a workman. The point no doubt would be taken, on behalf of the masters, the defendants, that as the House of Lords' decision was not given until December 10, the plaintiff only then decided to appeal, and had been led to make the present application only after seeing a report of the case in the Press. Mr. Ruegg assured the Court that the only reason of the delay was the mistaken belief of the solicitor that the County Court Judge had extended the time for appealing.

Mr. Powell in opposing the application said that but for the decision of the House of Lords the appeal in the present case would have been hopeless as the deceased man was "whitewashing" a ceiling at the time of the accident. His submission even now was that "whitewashing" was not "repairing" within the meaning of the Act. If it were then a man cleaning windows would come within the Section. He asked the Court to look with suspicion on the statement that the decision of the House of Lords over-ruling the view of the Act taken by the Court had really nothing to do with the delay in setting down the appeal. He asked the Court to dismiss the application.

The Master of the Rolls in giving judgment said that the County Court Judge had found, assuming the widow could show that her husband came within the benefit of the Act, that she would be entitled to some 250*l.* Having regard to the importance of the matter and that the solicitor had filed an affidavit taking upon himself the sole responsibility for the blunder, he thought that the leave asked for should be granted.

The Lords Justices concurred.

Mr. Ruegg stated that the appeal would be set down that day.

ACTION AGAINST BUILDERS.

THE case of Hardman, Powell, & Co. *v.* Johnson & Co. and Another came before Mr. Justice Bigham, sitting without a jury, in the Queen's Bench Division on the 11th inst.

Mr. A. T. Lawrence, Q.C., and Mr. Rowlands appeared for the plaintiffs; and Mr. H. F. Dickens, Q.C., and Mr. Montague Lush for the defendants.

It appeared from the statement of counsel that the action was brought by the plaintiffs to recover from the defendants the sum of 323*l.* 15s., in respect of art ironwork done in the new Palace Theatre, Plymouth. In January, 1897, a Mr. Pocock, one of the defendants, entered into a scheme to buy some land at Plymouth, and convert the then existing structure upon the land in Union-street into a theatre and hotel. Negotiations were commenced in January, 3, 1897. The following month a syndicate called London & Devon, Limited, was formed with a nominal capital of 50,000*l.*, and Mr. Pocock was interested in it. Messrs. Johnson & Co. were the builders of the theatre and hotel, and in their contract provision was made for the fittings, which formed the basis of the present action. Mr. Pocock was financing the business, and advanced about 70,000*l.*, for which he ultimately got 130,000*l.* in debentures and 10,000*l.* in shares in a company which was formed and called the County Theatre and Hotel Company, Limited. The sole point in issue was whether the London and Devon, Limited, were the persons for whom this work was done by the plaintiffs, or whether Mr. Pocock was the principal on whom rested the liability.

In the result, the action was settled on the terms that Mr. Pocock was to pay to the plaintiffs within six months debentures in the company for the sum of 450*l.* in settlement of the plaintiffs' claim, Mr. Pocock to have the option of buying back the debentures at the price of the claim within the six months, but if at the end of that period the debentures were not handed over to the plaintiffs, then there would be judgment for the plaintiffs for the amount of the claim without costs. The plaintiffs were ordered to pay the costs of Messrs. Johnson & Co. The record was accordingly withdrawn, and a second action in the list, Verity's, Limited, *v.* the same defendants, was settled on similar terms.

CLAIM BY A QUANTITY SURVEYOR AGAINST AN ARCHITECT.—IMPORTANT CASE.

THE case of Leach *v.* Arber came before Mr. Justice Bigham, sitting without a jury, in the Queen's Bench Division, on the 14th and 15th inst. The facts sufficiently appear from the following judgment:—

Mr. Justice Bigham, in the course of his judgment, said the action was brought by the representatives of a gentleman named Robertson, a quantity surveyor, who had died, to recover from the defendant a reasonable sum for the preparation of some specifications required for the construction of a theatre and hotel at Plymouth. The question his lordship had to determine was whether in the whole of the circumstances he could find an implied promise on the part of the defendant to pay for the work. It was admitted by the plaintiff that there was no express promise on the part of the defendant to pay for the work. The work which was done consisted of the preparation of some specifications. A Mr. Earl in 1897 was employed by Mr. Robertson to assist him in the preparation of the bills of quantities for the theatre and hotel in question, and he was employed by Mr. Robertson on the terms that the remuneration that Mr. Robertson was to receive for the preparation of the bills of quantities should be divided equally between them. That was the contract existing between Robertson, the employer, and Mr. Earl, the servant, and the contract had been fully carried out. Mr. Earl assisted Mr. Robertson in the preparation of the bills of quantities, and received from Mr. Robertson in his lifetime the remuneration he was entitled to, and so there was an end of that. When the bills of quantities were about to be prepared, Mr. Robertson appeared to have discovered that Mr. Earl had in his possession the plans and specifications relating to a theatre in Edinburgh, and it seemed to have been thought that these plans and specifications might be of some assistance to the defendant, who was the architect for the buildings in question, and in the work which the defendant as architect had to do. On April 15, 1897, Mr. Robertson wrote to the defendant a letter stating that he sent the plans, but that the specifications for the moment had been mislaid, but that they would be searched for and sent on in due course. Mr. Earl said, in the witness-box, that the statement in the letter that the specifications had been mislaid was untrue, and that it was so stated to afford some sort of excuse for not showing the specifications to Mr. Arber. His lordship very much doubted whether he ought to accept Mr. Earl's evidence about that. He was rather disposed to think that the letter was perfectly honest, and that Mr. Robertson, when he wrote it, thought that the specifications had been mislaid. A great deal of discussion had taken place as to what happened at an interview between Mr. Arber and Mr. Earl. Mr. Earl's version of the interview was that he had a talk with Mr. Arber as to the preparation of the specifications for the theatre—there were two specifications, one for the foundation and the other for the superstructure. That Mr. Arber told him (Earl) that it would be a great assistance to him in the preparation of the plans if he could be furnished with a specification, and then asked Earl to prepare it. Earl said that if he did, he should require to be paid for the work by somebody; when Mr. Arber replied that he would take care to make the necessary arrangements with Mr. Robertson for the payment by Robertson for the work to be so done. Mr. Earl had admitted that it was a very unusual thing to prepare specifications before plans were prepared, but explained its being done in this case by saying that Mr. Arber was a tyro in connexion with such work as the preparation of plans for a theatre, and wanted these specifications in order to supply him (Arber) with the necessary information and guidance for the preparation of the plans which he had to prepare as architect. In these circumstances, Mr. Earl said he

* See the *Builder* for April 1, 1899, p. 332, and December 15 last, p. 531.

proceeded to draw out the specification for the theatre. Mr. Arber's version of what took place at that conversation was that he never said or did anything to convey to Mr. Earl the idea that he was intending to pay for the specifications at all, or that he was in any way requesting Earl to make them out for him. Mr. Arber had said, and his lordship believed him, that it was by no means an uncommon practice for quantity surveyors to prepare the specifications and to send them to the architect. Mr. Arber had pointed out that that course of business was very often advantageous to the quantity surveyor, because he was able to prepare his bills of quantities with greater ease and with greater exactness upon a specification which he had taken the trouble to prepare himself than he would upon a specification which was prepared for him by the architect. His lordship thought that it was the common practice to do the work in that way, and that in the present case the specification was not prepared by the architect, nor prepared at the architect's request, nor in such circumstances as to raise, in his lordship's opinion, an implied promise by the architect to pay the person who prepared it. His lordship accepted Mr. Arber's account of what took place at the interview between himself and Mr. Earl on April 15 or 16, and did not accept Mr. Earl's. He had said that after that interview Mr. Earl did draw out the specifications, and in this connexion he (his lordship) might refer to the later specifications which were drawn out in October. In his opinion, in the same circumstances those specifications were drawn out for the benefit of Mr. Robertson. They were drawn out by Mr. Earl, and were used by Mr. Robertson in the preparation of the bills of quantities which were used by Mr. Arber in his capacity as architect. He thought the work which was done by Mr. Earl in connexion with the specifications for the theatre was almost entirely desk work, and consisted of little more than a copy of the specifications which he had in his possession relating to the Edinburgh theatre. The specifications were altered to some considerable extent by Mr. Arber when he came to exercise his mind as architect upon them. He thought that the work done by Mr. Earl in connexion with the preparation of the specifications was really very small. Mr. Arber had said that 25*l.* would be ample payment for the work, and his lordship was not at all sure that Mr. Arber was not right. But he would say this—so that this part of the case might be once and for all disposed of—if it should in some other court turn out that he was wrong in holding that Mr. Robertson's executors were not entitled to recover in this action, he found as a fact that 40*l.* would be sufficient payment for the preparation of these specifications. He considered that that would be ample payment for the work done. He was of opinion that Mr. Arber was not in any way liable to pay that sum, and if it were necessary he should say that Mr. Robertson's estate was not liable to pay it either to Mr. Earl. That, however, did not come within his lordship's province to decide. He held a strong opinion that what Mr. Earl did was nothing more than a service for which he got paid by Mr. Robertson in the latter's lifetime, and that he had no claim against anybody for payment in respect of these specifications. Now what happened after April 16? On April 22 Mr. Earl said he made an agreement with Robertson that he was to get 1¼ per cent. for preparing these specifications. His lordship did not believe there was any such agreement at all. He saw nothing in the correspondence, or outside it, to lead him to suppose that any such agreement was made. The work of preparing the specifications was done by Earl under his retainer from Robertson. In other words, it was part of the work which Earl was expected to do for Robertson, and for which Robertson paid him in his lifetime by giving him one-half of the commission received by Robertson in respect of the preparation of the quantities. His lordship then dealt with the other letters which had passed between Mr. Earl, Mr. Robertson, and Mr. Arber bearing on the case, and said that on March 13 Earl wrote a letter withdrawing his claim against Mr. Arber. On the strength of that withdrawal Mr. Robertson got payment for the bills of quantities and gave a receipt, which included a charge for lithographing the specifications. In his lordship's opinion that included all the claim which Mr. Robertson had against Mr. Arber in respect of those specifications. Never in his lifetime did Mr. Robertson make such a claim as his representatives were now seeking to enforce. Earl brought an action against Robertson, but failed, and, as his lordship thought, quite properly failed. Then for some reason Robertson's executors brought the present action against Mr. Arber. His lordship was sorry to think that the estate was being spent in litigation of that kind when it ought not to be used for any such purpose. He must enter judgment for the defendant with costs.

Mr. Nepean appeared as counsel for the plaintiff, and Mr. Willes-Chitty for the defendant.

RECENT PATENTS:

ABSTRACTS OF PATENTED INVENTIONS.

18,204.—BURNERS FOR COOKING-STOVES, &C.: *F. Trendel.*—For atmospherical acetylene burners the mixture of air and gas is provided for by the insertion of a short mixing-pipe in the main mixing-tube, the gas nozzle being placed underneath the entrance to the mixing-tube. In order to prevent the mixed air and gas from being intercepted at the mixing-pipe's outlet, a space is made between that pipe and the mixing-tube; the latter arrangement will moreover maintain the velocity of inflow at an even rate.

18,230.—METHOD OF REMOVING PROPS: *H. J. Taylor.*—For the withdrawal of props from mines are devised a rope and chain, which are secured to the hook of a sliding tubular nut or sleeve, to be drawn inwards with a screw that is turned by a hand-lever and bevel wheels; a pin that is screwed through a casing into a key groove in the tube prevents the tube from rotating, whilst on the screw's end is a thrust-nut formed with grooves wherein anti-friction balls are placed.

18,257. — FIREPROOF MATERIALS: *Simmons & Bocks.*—Slabs, bricks, sheets, &c., are fashioned of an admixture of cement (seven parts), asbestos (about twenty parts), zinc oxide (from three to ten parts), and weak glue water, which is laid upon a backing of wire netting, jute, and so on. They are next pressed and impregnated with a solution of sulphate of alumina. For a covering of floors and walls the mixture is made of cement, asbestos, and water glass; and for roofing purposes the sheets or plates are rendered waterproof with a compound of alum (six parts), sugar of lead (two parts), and soda (one part).

18,265.—A PAINT-SPRAYER: *C. L. Burdick.*—An air-valve is mounted on the central part of the tool, which comprises a handle, a nozzle, and a reservoir. The supply of paint or pigment is regulated with a pin valve, to be closed with a spring and opened with a forked lever at the drawing back of the thumb-piece, to which is joined a link that acts upon the air-valve's spindle, whereby the supplies of air and of paint are separately regulated. In order that the spring shall not close the pin valve too tightly, the forked lever is held up by means of an annular cam's lug that projects through the casing. In a modified shape of the tool for doing coarse work, the pipes which are joined on to the reservoirs of air and paint constitute the handle. On the sleeve which carries the paint valve is a stud which is linked to the air valve, and has an adjustable stop which controls the opening. A separate reservoir, having a valve in its stem, may be affixed to the handle, just below the nozzle.

18,335.—ARC LAMPS: *H. Bremer.*—In order that the carbons shall present a large sectional area, they are fashioned as flat plates or groups of rods, and to produce long arcs that shift about quietly; the carbons contain at least 5 per cent. of calcium or magnesium fluoride or bromide; further, to obviate flickering, they are made up with certain portions of calcined salt of potassium, sodium, or boron, and after they have been rendered red-hot and immersed in a fused salt of boron they will assume a glass-like coating which will absorb their residual slag.

18,352.—JOINTS FOR PIPES: *S. R. Dresser.*—In the case of butt and expansion joints, a joint between the plain unthreaded ends of large pipes is effected by means of divided sleeves, which are bolted on to the pipe ends, and will at the same time provide for any slight movements arising from contraction or expansion, through the sleeves themselves; the sleeves are recessed for packing and over the pipe-ends is placed a coupling-sleeve or gland; in another shape the divided sleeves are fashioned with additional projections upon their sides that can be bolted together.

18,353.—MANUFACTURE OF DRAIN AND OTHER PIPES: *C. J. Kielberg.*—The mould in which cement pipes may be cast has an internal core, and an external casing made in two parts, the latter is locked in position upon a wooden pallet. After the mould has been filled with cement a spiral flange turns the core and raises it through the cement. As the cement is lifted to the top the flange's horizontal part smooths away the pipe's upper end, when the cast pipe within the casing is carried upon the pallet to the drying-yard, it is left to become dry upon the pallet, the casing having been removed.

18,378.—BENCH-CRAMPS: *E. Arnold.*—A screw serves to adjustably fix to a stem's head the jaw of a piece which clamps the work on to the bench. In that piece is a groove into which the stem's head will fit, and there are holes in the bench that receive the stem which may be serrated, screwed, or plain, and is retained in its place whilst it is being used by its jamming against the hole's sides.

18,379.—PLUG COCKS: *F. M. Ashley.*—A valve projection, with a packing and a gland, which is fixed with a sleeve upon the spindle, is disposed within a central opening of a collar fastened with a nut on to the plug cock's casing; the valve is lifted or lowered when the sleeve is turned, and without changing the degree of compression of the packing; for clamping the gland to the valve's spindle lock-nuts can be employed, and the gland may be formed integrally with the sleeve, so that it can be screwed into the opening cut in the collar.

18,407. — A HOLD-FAST FOR PIPES: *E. M. Edwards.*—A projection which is either fastened or fashioned upon the pipe is so formed that it will engage with a slotted receiver upon the plate which is to be affixed upon the wall; in the receiver or holder is a hole through which is passed a pin that secures the pipe in position as keyed in the slot of the plate.

18,442.—BRICK, TILE, AND BLOCK MOULDING: *R. Stanley.*—Before the insertion of the rough material into the mould of the press, a coating of clay slip, oxide of iron, or oxide of manganese, to which a lubricating or other liquid may be added at option, is injected into the mould in order to allow of inferior clay being used for the body of the brick or tile, and to give it a surface having the desired vitrification, colour, and finish. By one form of the invention the slip is forced from its feed-chamber through a pipe and the pierced lining-plates of the mould by means of a current of air or steam, the supply of slip into the chamber being regulated with a cam, rod, lever, and springs. The lever opens a valve for the admission of compressed air or steam into the chamber when the valve has been shut, and before the valve has been again opened a spring acts so as to liberate the valve. The mechanism further provides for the supply to the mould of a half-dried and powdered material, as well as of coloured dust. The specification includes an arrangement whereby slips can be sprayed upon the sides and bottom of the mould, and the invention is described as being adapted for use with presses after various kinds, together with the press which is specified in No. 7,297 of 1898.

18,489.—INCANDESCENT LAMPS: *Siemens and Halske Aktiengesellschaft.*—For their connexion with metal wires, tubes, strips, &c., the ends of incandescence bodies that will conduct only when they become heated are coated with some suitable material, and are then reduced to a white heat until they become so plastic that the wires or strips can be pressed into them. For coating the ends they are heated and dipped into powdered boron, silicon, or refractory metals, such as manganese, molybdenum, titanium, chromium, nickel, and platinum metals and their alloys, for which, however, may be substituted their oxygen-free compounds — for instance, sulphides, phosphides, carbides, or nitrides, and the coating compounds may be applied in the shape of a paste mixed with hydrocarbons or water.

18,497.—DRAWING-BOARDS, &C.: *J. Trey.*—With the object of preventing the board from warping it is composed of sheets of veneer, which constitute both its back and front, the sheets of veneer being fastened to a set of slats placed between them, which interlock transversely and are inserted within a four-sided frame.

18,513.—GAS STOVES: *H. Lisle, and Presto Gear-Case and Components Company.*—Upon the stove's hot-plate is mounted a hot closet divided into two stages and having two separate doors, the upper stage has removable shelves and the partition between the two stages is also removable, the metal closet may be lined with wood or some other non-conducting material and is fitted with rails, thus forming a cupboard for warming articles of food and for drying garments, &c.; it is to be heated by the burner and can be heated further by waste gases from the stove.

18,517. — AN APPLIANCE FOR WINDOWS: *A. Nesemann.*—Cords that are passed over pulleys join together the two horizontal halves of the window so as to balance the one half with the other, and the cords are caused to slide within recesses, formed in the wall, as the window is being opened.

18,545.—FIRE-GUARDS: *S. Muir and W. E. Speak.*—The guard's front and wings are pivotted together upon projecting pieces; when the guard is opened out the meeting edges of the wings are stopped by the edges of the front; an adjustable bracket, mounted upon a carrier, and consisting of a dove-tailed piece with a screw-pin, is secured to the guard's upright bars, or the bracket-carrier, having horizontal holes for the rods which constitute the bracket or carrier, may be made of a bar which connects two of the uprights, two screw-pins being used for fastening purposes.

18,550.—A LINING FOR TUBES AND CONDUITS: *A. M. Lougee.*—An electrically-insulating lining is laid within the metal tube or pipe, and is then expanded so as to fit tightly against the tube with compressed air or live steam injected through a nozzle that fits into one end of the tube. For an insulating material the inventor prefers a compound of sulphur, a vegetable oil, zinc or lead oxides, &c., some fibrous substance, waste rubber, with chalk, &c., for a filling, and some such adhesive material as tar, resin, gums, asphalt, and tuna gum, or balata in place of rubber is prepared and spread upon one side of a sheet of light fabric, such as paper. After the sheet has been coated with a suitable adhesive cement it is cut up into strips and the backing is taken away along one edge, then the strip is bent round and inserted into the tube. When the lining has been expanded and fitted within the tube the paper backing is stripped away with a rod to which one end of the bare backing is secured, so that the insulating lining shall remain closely against the tube's inner surface.

18,570.—SAFE AND SIMILAR LOCKS: *J. Lips.*—The invention applies to the locks for use in safe-deposits, banks, and so on, which are turned with two keys; the banker's key locks one bolt, and then the tenant's key is used for turning the other bolt

so as to lock the former bolt and to cover the banker's key-hole; pivotted levers which a double-bitted key throws into position secure the one bolt, whilst the other bolt has two sets of sliders whereof one set moves only vertically and the other set vertically and, with the other bolt, horizontally; a corresponding slider is engaged by each of the former set of sliders until the bolt has been shot forward, and as the engagement ceases the sliders fall downwards; when it is desired to unlock the safe the locking key is employed for lifting the former set of sliders into their proper positions, in order that the latter set may pass back into their engagement with them, when the bolt is unlocked a pin prevents the drawing out of the tenant's key, but before a new key can be used the pin must be drawn out so as to allow of the old key being taken away whilst the mechanism stands in the unlocked position.

18,623.—MANUFACTURE OF TUBES: *E. T. Wainwright.*—Tubes intended for gas, water, and other purposes are manufactured out of helically-coiled puddled iron bars in various ways. The coils, for instance, may be made plain, or so as to overlap at their edges; a coiled tube may envelope an ordinary tube; or the tube may be constructed out of two coiled tubes together. The diameter of the tube fashioned from the puddled bar and coiled upon a mandrel is reduced during the process of rolling or working it, the helices being welded to one another.

18,667.—A SELF-CLOSING NON-JERKING STOP-COCK: *S. C. Sörensen.*—Against the seating of a diaphragm, which divides the outlet from the inlet, is placed a flexible diaphragm which is pressed by the running water in a container beneath, and has a seating which is pressed with a valve. When the push is forced downwards the flow of water from the container enables the flexible diaphragm to be depressed from above, and so to allow the water to flow directly to the outlet; but when the push is freed the water will flow into the container, whereupon the outlet becomes closed by the gradual pressure of the flexible diaphragm.

18,698.—LAVATORY AND SIMILAR FITTINGS: *T. W. Rogers.*—For waste fittings the inventor has devised a grating with orifices whose area is equal to or larger than the area of the discharge pipe. The grating fits into a recess in the mouth of a funnel-shaped attachment or receiver, which is secured with a nut on to the bottom of the basin, sink, &c.; instead of the customary plug a disc having its edge faced with india-rubber is used.

18,719.—CANS FOR INFLAMMABLE OILS, &C.: *F. Henze, F. Cohn, & W. H. Schmitz.*—In order that a flame may not enter the interior of a petroleum, benzine, or other can, the inner sieve of the filling-hole (which has a cap) is safe-guarded with a pierced box whose points press outwards against the sieve; a conical sieve is inserted also inside the spout at its base, a same kind of sieve is provided for the air-hole, and the cover which is fixed over it will return back into the can any oil that may be splashed out.

18,747.—FIREPROOF MATERIALS: *A. Imschenetzky.*—The invention affords a method of impregnating with silica the layers of material of which sheets of asbestos, cardboard, and other substances are formed for use in buildings and other purposes. The mechanism ensures that when the material is wound upon the large drum it shall have first passed in contact with a roller, by means of which a solution of sodium silicate is constantly applied, and shall then pass in contact with another roller which supplies some liquid—a solution of sodium bicarbonate, say—which will decompose the sodium silicate with deposit of colloidal silica. Together with the specification should be read Nos. 5,254 of 1895 and 4,628 of 1898.

18,750.—JUNCTION BOXES FOR ELECTRICAL MAINS: *C. C. Fowler, and Reason Manufacturing Co.*—Short lengths of cable arranged so as to extend outwards, that they may be connected with the mains, are attached to the junction-boxes of concentrical and other electrical mains, whose inner ends are connected to plug sockets which project through an insulating cover-plug from the insulating base upon which they are mounted. Plug sockets that correspond with the cable sockets are fitted on to insulated spiders; over the box may be clamped or screwed a covering-plate, and fuses that pass over insulating ridges may be provided for the plugs, which are disposed in pairs.

18,809.—AN ARTIFICIAL STONE: *W. Schwarz.*—Before the materials for making an artificial sandstone of lime and sand have been mixed together, the unknown amount of moisture which they contain is eliminated, and the compound is afterwards reduced into a plastic condition with water or steam; the component materials should be dried in vacuum-pans, which have revolving wings, that will mix the dried materials whilst they are yet *in vacuo*.

18,810.—GAS BURNERS FOR SOLDERING AND KINDRED OPERATIONS: *P. Heinz and F. Heinz.*—In the case of gas burners whose flame is automatically controlled with the pressure of air within the blow-pipe the air pressure is caused to act upon a little piston, which will operate the gas-supply valve either directly or by means of an electrical relay; the passing of dust into the interior of the burner is stopped by a cup-shaped nozzle, having a pierced inner cup; flow of moisture is arrested by the turned-in nozzle, and a saliva-trap is added, together with an air-vent, for the space over the piston. When an electrical relay is used for the air piston's working of the gas-supply valve, it is arranged that a valve shall be opened by means of the rising of the piston, so as to complete the circuit of an electro-magnet—the burner-cup being filled with fine copper wire—a pilot flame, that is fed with a by-pass, being attached to the burner in both instances.

18,835.—ROAD-BREAKING: *H. Gebler.*—The apparatus for breaking up a road is to be used as an attachment to a steam-roller or other motor, to which it can be fastened with a pivoted bolt held by a cottar; wheels at the back sustain the frame, and on the axle is mounted a tool-carrying frame, which is retained at the desired angle by means of adjustable stops; a front-bar supports the chisel, which is clamped in its place with screws.

18,851.—WATER-HEATING APPARATUS: *J. T. Mazey.*—In the case of slow-combustion stoves or water boilers, the hot-water pipes, which are convex-concave in shape, may be used with the channel uppermost or as economisers, &c. For heating greenhouses and for similar purposes the stove has two oval tapered shells, the one being placed within the other, which are joined to top and bottom plates, grooved and bolted together; water-tight joints are made with asbestos or other washers and red lead; the fire grate is made in two portions, that may be hooked on to the bottom plate, so that, upon the drawing out of a rod, the halves will hang down, or it may be made in one piece held at one end with bar buttons and hinged at the other.

18,856.—EXTINCTION OF FIRE: *S. Fryer.*—The principle of the invention lies in the substitution of a cylinder-shaped container having a hand-regulated valve, for the customary glass bottle, which holds the acid. The container is fixed upon a cap which is screwed upon the top of the machine. When a projecting rod is forced downwards, the valve at the base of the container opens and sets the acid free, and the resultant mixed gas and alkaline solution is thereupon dischaged through an outlet pipe, the valve having been again closed through the action of a spring; the receiver may be fitted with a piston, which will prevent the pressure of the gas from driving the acid back.

18,863.—CLUTCHES: *J. Monkhouse.*—Two arms upon the friction ring, which is split at two points, join it to a boss, which is keyed upon the shaft, and from a sliding sleeve spring arms, to the ends of which are pivotted toggles which fasten on to the pulley the drum whereon the ring is expanded; ledges, against which the toggles will bear, are fashioned upon the arms and upon abutments at the ring's free ends.

18,866.—PIPE COUPLINGS: *New Haven Novelty Machine Company.*—The coupling is devised for joining leaden pipes to one another, as also to wash-basins, baths, gas-meters, &c. A sleeve is put upon the pipe-end, and the screwed and tapered end of a ferrule or coupling-piece is screwed into the pipe so that it shall engage with both the sleeve and the pipe; the flange of the ferrule's screwed collar is segmented that it may be slipped over the ferrule's screw-thread, which is correspondingly slotted. In another shape, applicable for joining two pipes to one another, sleeves are first fitted on to the pipe ends, into which a double-ended plug is then screwed.

18,874.—A CONTRIVANCE FOR USE WITH GAS AND OTHER PIPES: *C. A. Weber-Marti.*—The inventor's object is to furnish means of regulating the supply of gas, fluid or liquid, in pipes, from a distance. Across the supply-pipe he places a piston-valve which is worked with air-pressure through another tube, the air gaining entrance behind the piston through a slot. A Bunsen-flame by-pass is joined beneath the valve and the piston.

18,879.—FACING-BLOCKS, TILES, AND BRICKS: *H. F. Webb.*—The bricks, blocks, and tiles, intended principally for use in mosaic work, are made with a porous backing of cement and a flux which is applied when in a plastic state and is affixed by fusion at a low temperature, whilst they are faced with layers of porcelain, glass, or some other vitrified substance; keys for taking the setting are fastened upon the rear face of the back of the block or brick.

18,903.—APPARATUS FOR EXTINGUISHING FIRE: *A. E. Kennedy.*—A system of automatic sprinklers is connected to a tank, constructed as an extincteur, and also to the water-supply in the street; a lever which is tied up with wire that will become fused by fire, holds up the valves of the sprinkler-heads that are carried by the horizontal portion of the outlet pipe, and the fusing of the wire will also allow of the escape of the compressed air which has been forced into the pipes with a hydraulically-worked pump; at the same time, a piston-rod is drawn back by the pressure upon a flexible diaphragm set within the casing, whereupon a trip-lever is liberated so as to let the acid bottle which is within the tank fall and empty itself into the soda solution, the chemical solution and the gas being then impelled through the pipe to the sprinkler. Collapse of the bellows for opening a valve which admits the supply of water from the street to the sprinklers is brought about by the falling of a non-return valve, through which the pressure in a containing vessel communicates with the pressure in the tank when the latter pressure has fallen below a certain amount. The drawing back of the piston-rod serves to start an electrical alarm at a station either near or remote.

18,945.—TILED BUILDING-BOARDS: *G. F. Gruendler.*—Composite blocks for use in constructing ceilings, floors, panels, wainscoting, fire-places, and so on, are made by cementing facing-tiles to wooden boards or blocks with an adhesive admixture of lime and fresh Dutch cheese, whereby the combination of the cheese's lactic acid with the lime results in the formation of a cement which contains calcic lactate.

18,959.—CLOSET VENTILATION AND SIMILAR PIPE TRAPS: *M. W. Household and P. T. Ardley.*—By way of improving the contrivance specified under No. 1,141 of 1895, the inventors devise a valve composed of two calottes, set one above the other upon a stem, which shall control the admission of air that prevents the siphonage of the traps; the lower calotte, bearing against its seating, will rise to allow the air to enter, but will close to stop any overflowing; or the valve seating may assume a vertical shape, the calotte being hung upon a hook and pressed with an aluminium spring against its seating; the valve is also adapted for use with ventilating pipes.

MEETINGS.

FRIDAY, JANUARY 18.

Architectural Association.—Mr. Edwin T. Hall on "Flats." 7.30 p.m.

Royal Institution.—Professor Dewar, M.A., on "Gases at the Beginning and End of the Century." 9 p.m.

Institution of Mechanical Engineers.—Fifty-fourth annual general meeting. Election of President and members of council. The first presentation by the Institution of the Willans Premium will be made to Captain H. Riall Sankey; and the prizes awarded by the council for the best two papers in the Graduates' Section will be presented to Mr. W. B. Cleverly and Mr. Brees van Homan. The adjourned discussion will be resumed upon the following paper, by Mr. H. A. Humphrey, on "Power-gas and Large Gas-engines for Central Stations," read at the December meeting. 8 p.m.

Architectural Association of Ireland (Technical Demonstrations).—Mr. Malcolm on "Limes, Lathing, Plastering, Cement," &c. (at Messrs. G. Rome & Co.'s, 22, Moss-street). 4.30 p.m.

MONDAY, JANUARY 21.

Royal Institute of British Architects.—Sixth general meeting (ordinary).—1. To read the deed of award of prizes and studentships for 1900-1901. 2. Mr. J. J. Stevenson, F.S.A., on "Difficulties and Hindrances in Producing Good Modern Architecture." 8 p.m.

Society of Arts (Cantor Lectures).—Mr. J. Liberty Tadd on "Elementary Art Education." II. 8 p.m.

Leeds and Yorkshire Architectural Society.—Dinner.

Liverpool Architectural Society.—(Members' meeting.) Mr. Ronald P. Jones, B.A., on "The Saracenic Architecture of Cairo," illustrated by limelight views. 6 p.m.

TUESDAY, JANUARY 22.

Royal Institution.—Professor J. A. Ewing, M.A., on "Practical Mechanics (experimentally treated): First Principles and Modern Illustrations."—II. 3 p.m.

Institution of Civil Engineers.—Mr. J. T. Ford on "The Present Condition and Prospects of the Panama Canal Works." 8 p.m.

WEDNESDAY, JANUARY 23.

Society of Arts.—Mr. F. B. Behr on "The Proposed High-speed Electrical 'Monorail' between Liverpool and Manchester." 8 p.m.

Institution of Electrical Engineers (Birmingham Local Section).—Inaugural meeting of the section, at the University Buildings, when Dr. Oliver Lodge will deliver an address. 8 p.m.

Northern Architectural Association.—Mr. Jas. Bruce on "Recent Data Concerning Concrete Beams and Concrete Floors." 7.30 p.m.

THURSDAY, JANUARY 24.

Institution of Electrical Engineers (meeting at the Institution of Civil Engineers).—Adjourned discussion on Mr. W. M. Mordey's paper on "Capacity in Alternate Current Working." 8 p.m.

FRIDAY, JANUARY 25.

Institution of Civil Engineers (Students' Meeting).—Mr. C. Johnston on "Sewage Treatment." 8 p.m.

Institution of Junior Engineers.—Mr. A. Ross on "Railway Construction," at the Westminster Palace Hotel. 8 p.m.

Architectural Association of Ireland (Technical Demonstrations).—Mr. T. Baird on "Drainage" (at 12, Lower Abbey-street). 4.30 p.m.

Glasgow Architectural Craftsmen's Society.—Mr. J. M. Arthur on "Legal Points relative to Building." 8 p.m.

SATURDAY, JANUARY 26.

Institute of Junior Engineers.—Anniversary Dinner, Westminster Palace Hotel. 7 p.m.

Dundee Institute of Architecture.—Visit to St. Luke's Church, &c., West Ferry.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c., Supplied by	Tenders to be delivered
*Rails, Fish Plates, &c.	Plymouth Corporation	Borough Engineer, Plymouth	Jan. 21
Water Mains, &c.	Rotherham Corporation	Borough Surveyor, Town Hall, Rotherham	do.
*Stoneware Pipes	Edmonton U.D.C.	Engineer, Town Hall, Edmonton	Jan. 22
Building Work	Leeds School Board	W. Packer, School Board Office, Leeds	do.
Station Buildings, Bowling Junction	Lancs & Yorks Railway Company	R. C. Irwin, Hunt's Bank, Manchester	do.
Pair Semi-detached Villas, Ferndale, Wales	Messrs. D. Hannah & I. Davies	J. L. Smith, Architect, Aberdare	do.
*Sewers	Tottenham U.D.C.	Engineer, 712, High-road, Tottenham	do.
Culvert, &c., Stand-lane	Radcliffe (Lancs) U.D.C.	J. Sharples, Council Offices, Radcliffe	Jan. 23
Building Work at Baths	Rochdale Corporation	S. S. Platt, Borough Surveyor, Town Hall, Rochdale	do.
Shop and Houses, Birkby, Huddersfield	.....	J. Berry, Architect, 9, Queen-street, Huddersfield	do.
Stone Bridge over River Lee, Cork	.....	W. H. Hill & Son, Engineers, 28, South Mall, Cork	do.
Additions to Electricity Works, Foundry-street	Halifax Corporation	J. Lord, Civil Engineer, Town Hall, Halifax	do.
Alterations to Baths, Leaf-street	Manchester Corporation	City Surveyor, Town Hall, Manchester	do.
Shed Extensions, &c.	do.	do.	Jan. 24
Extension of Electricity Works, Prince Rock	.....	J. Paton, Borough Engineer, Municipal Offices, Plymouth	do.
Warehouse, South Dock	Swansea Harbour Trustees	A. O. Schenk, Civil Engineer, Harbour Offices, Swansea	do.
Baths	Dewsbury Corporation	G. T. Lee, Town Hall, Dewsbury	do.
Sewering, &c., Glen-street	Blackpool Corporation	J. S. Brodie, Borough Surveyor, Town Hall, Blackpool	do.
Retaining Wall, &c., Wheatley Carr	Barrowford (Lancs) U.D.C.	J. Mallinson, Surveyor, Council Offices, Barrowford	Jan. 25
Church Restoration, Whicham, Lancs	.....	Austin & Paley, Architects, Lancaster	do.
Artisans' Dwellings	Shillelagh (Ireland) R.D.C.	J. J. O. Ramsay, Civil Engineer, Council Offices, Shillelagh	do.
Additions to St. Matthew's Schools, Preston	.....	T. Nevett & Sons, Architects, 41, Fishergate, Preston	do.
*Coast Guard Buildings at Dungeness	Admiralty	See Advertisement	do.
*Coast Guard Buildings at St. Mawes, near Falmouth	do.	do.	do.
Public Library, &c.	Briton Ferry U.D.C.	H. A. Clarke, Architect, Briton Ferry	Jan. 26
Business Premises, Carlton-street, Castleford	Mr. E. Binks	Garside & Pennington, Architects, Castleford	do.
Surveyors' Materials	Birmingham Corporation	City Surveyor, Council House, Birmingham	do.
Additions to House, East Bridge-street, Falkirk	.....	D. Ronald, Burgh Surveyor, Falkirk	do.
*Sinking of an Artesian Well, &c.	Wandsworth Borough Council	Council House, Wandsworth	Jan. 28
Drainage Works, Henfield, Sussex	Steyning West R.D.C.	E. Cripps, Council Offices, Ham-road, New Shoreham	do.
Waterworks, Carisbrooke, Isle of Wight	Newport Corporation	E. J. Hildred, Engineer, 1, High-street, Gosport	do.
Offices and Cookery Centre, Belvedere	Erith School Board	Ford, Son, & Burrows, Architects, 21, Aldermanbury, E.C.	do.
Thirty Houses, &c., Ringby, Halifax	.....	M. Hall, Architect, 29, Northgate, Halifax	Jan. 29
Engine House, Mitcham-road	Croydon Town Council	E. Mawdesley, Town Hall, Croydon	do.
Destructor Buildings, Owlerton	Sheffield Corporation	C. F. Wike, Civil Engineer, Town Hall, Sheffield	do.
*Granite	Kingston-on-Thames Corporation	Borough Surveyor, Clattern House, Kingston-on-Thames	Jan. 30
*Sewering, Levelling, &c.	do.	do.	do.
*Works and Materials	Chelsea Borough Council	See Advertisement	do.
Chapel & Schoolroom, Commercial-rd., Tredegan, Mon	.....	W. S. Williams, Architect, Elmwood, Tredegar	do.
Chapel and School, Tredegar	.....	do.	do.
*Stores, Cart Shed, &c.	Sandgate U.D.C.	See Advertisement	Jan. 31
Alterations to Hotel, Llandudno	.....	T. B. Farrington, Civil Engineer, Trinity-square, Llandudno	do.
Waterworks, Selston	Basford (Notts) R.D.C.	G. & F. W. Hodson, Engineers, Bank-chambers, Loughborough	Feb. 4
*Mixed School	Darlington School Board	G. Gordon Hoskins, Architect, Court-chambers, Darlington	Feb. 5
Ward Block, &c.	Aldershot U.D.C.	N. F. Dennis, Surveyor, Aldershot	do.
*Wood Paving	Hove Corporation	Borough Surveyor, Town Hall, Hove	Feb. 6
Steel Bridge, Brotherton, Yorks	North-Eastern Railway Company	W. J. Cudworth, Engineer, York	do.
*Mentally Deficient and Pupil Teachers' Centres	Willesden School Board	G. E. T. Laurence, Architect, 22, Buckingham-street, Strand, W.C	do.
*Children's Home	St. George's (Hanover-sq.) Union	E. T. Hall, Architect, 57, Moorgate-street, E.C.	Feb. 11
*Electric Light Station	Whitby U.D.C.	Clerk, Council Offices, Whitby, Yorks	Feb. 12
*Two Board Schools	Ashford (Middlesex) School Board	Fleetwood, Son, & Eversden, 3, New Court, Lincoln's Inn, W.C.	Feb. 15
Eight Houses, Keighley	.....	Smith & Whitaker, Builders, Keighley	No date
House and Shop, Sandbanks-road, Parkstone, Dorset	Mr. G. Kilford	W. Andrew, Architect, Parkstone	do.
Car Shed, Shops, Walls, &c., Poole	.....	C. W. G. Little, Engineer, Donington House, Norfolk-st., Strand	do.
House, Druid's Lodge, near Salisbury	.....	W. C. & A. S. Manning, Architects, Newmarket	do.
Building Work at Town Hall	Bingley (Yorks) U.D.C.	H. Bottomley, Surveyor, Town Hall, Bingley	do.
Street Works, Heath, near Chesterfield	Hardwick Colliery Company, Ltd.	W. M. Ashmore, Architect, New Queen-street, Chesterfield	do.
*Schools	Newhaven School Board	See Advertisement	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Borough Engineer's Assistant	Barrow-in-Furness County Council	7*l.* per month	Jan. 28
*Borough Engineer's Chief Assistant	do.	14*l.* per month	do.
*Draughtsman	Hackney Borough Council	2*l.* 2*s.* per week	Jan. 29
*Assistant Surveyor	Stepney Borough Council	200*l.* per annum	Jan. 30
*Road Foreman	Wokingham Corporation	30*s.* per week	Mar. 4

Those marked with an asterisk (*) are advertised in this Number. Competitions, p.—. Contracts, pp. iv. vi. viii. x. *&* xxii. *Public Appointments, pp.* xviii. *&* xxii.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

January 3.—By M. DEROME & SON (at Windermere).

Ullswater, &c., Westmoreland.—The Ullswater Hotel, Glenridding House, with seven cottages, The Glenridding Temperance Hotel, The Patterdale Hotel, Bridge End Farm, also five enclosures, total area about 65 a., f. £25,000

January 9.—By FERRIS & PUCKRIDGE.

Staines, Middlesex.—High-st., Elmsleigh and 1½ a., f. 2,000

By PHILIP STOCK.

Brixton.—25, Solon-rd., u.t. 97 yrs., g.r. 6*l.* 10*s.*, r. 36*l.* 350

January 10.—By LINNETT & LANE.

Harlesden.—68, High-st., u.t. 99 yrs., g.r. 32*l.*, r. 125*l.* 1,370

228, High-st., u.t. 83½ yrs., g.r. 5*l.*, r. 60*l.* 710

62A, 64, 68, 70, and 72, Craven Park-rd., u.t. 63½ yrs., g.r. 50*l.*, r. 345*l.* 4,255

By NEWBON, EDWARDS, & SHEPHARD.

Pentonville.—34, Wharton-st., u.t. 26 yrs., g.r. 6*l.* 300

King's Cross.—4, Caledonia-st., u.t. 3½ yrs., g.r. 8*l.* 100

Kingsland.—26 to 36 (even), Seal-st., u.t. 81½ yrs., g.r. 24*l.* 1,670

Hoxton.—54, Britannia-st., f., r. 30*l.* 405

By WORSFOLD & HAYWARD.

Hammersmith.—21 to 31 (odd), Cardross-st., f., r. 156*l.* 1,590

Hammersmith.—52, Brook-green, f., r. 75*l.* £900

Sinclair-rd., f.g.r.'s 210*l.*, reversion in 75 yrs.; 25 and 27, Girdler's-rd., u.t. 65 yrs., g.r. 4*l.*, r. 115*l.*; one-eighth share of the foregoing (estimated at 40*l.* 2*s.* 6*d.*) 560

Shepherd's Bush.—Hetley-rd., f.g.r.'s 27*l.*, reversion in 76 yrs. 630

January 11.—By W. B. HALLETT.

Highgate.—14, Woodview-gardens, u.t. 90½ yrs., g.r. 5*l.*, e.r. 50*l.* 515

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 16 0	per 1,000 alongside, in river.
Rough Stocks and Grizzles	1 12 0	,, ,, ,,

PRICES CURRENT (*Continued*).

BRICKS, &c.

	£ s. d.		
Smooth Bright Facing Stocks	2 18 0	per 1,000, alongside, in river.	
Shippers	2 8 0	,, ,,	,,
Flettons	1 10 6	,, at railway depôt.	
Red Wire Cuts	1 15 6	,, ,,	,,
Best Fareham Red	3 11 6	,, ,,	,,
Best Red pressed Ruabon Facing	5 5 0	,, ,,	,,
Best Blue Pressed Staffordshire	4 7 0	,, ,,	,,
Do., Bullnose	4 12 0	,, ,,	,,
Best Stourbridge Fire Bricks	4 4 6	,, ,,	,,
GLAZED BRICKS.			
Best White and Ivory Glazed Stretchers	13 0 0	,, ,,	,,
Headers	12 0 0	,, ,,	,,
Quoins, Bullnose, and Flats	17 0 0	,, ,,	,,
Double Stretchers	19 0 0	,, ,,	,,
Double Headers	16 0 0	,, ,,	,,
One Side and two Ends	19 0 0	,, ,,	,,
Two Sides and one End	20 0 0	,, ,,	,,
Splays, Chamfered, Squints	20 0 0	,,	,,

PRICES CURRENT (*Continued*).

BRICKS, &c.

	£	s.	d.	
Best Dipped Salt Glazed Stretchers and Headers ..	12	0	0	per 1,000 at railway depôt.
Quoins, Bullnose, and Flats	14	0	0	,, ,, ,,
Double Stretchers	15	0	0	,, ,, ,,
Double Headers..	14	0	0	,, ,, ,,
One Side and two Ends	15	0	0	,, ,, ,,
Two Sides and one End	15	0	0	,, ,, ,,
Splays, Chamfered, Squints	14	0	0	,, ,, ,,
Seconds Quality White and Dipped Salt Glazed	2	0	0	,, less than best.

	s.	d.	
Thames and Pit Sand	8	0	per yard, delivered.
Thames Ballast	6	9	,, ,,
Best Portland Cement	38	0	per ton ,,
Best Ground Blue Lias Lime..	25	6	,, ,,

NOTE.—The cement and lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 13s. 6d. per yard, delivered,
Stourbridge Fire-clay in sacks, 32s. 6d. per ton at rly. dpt.

STONE.

	s.	d.	
Ancaster in blocks	2	0	per ft. cube, deld. rly. depôt.
Bath ,, ...	1	7	,, ,,
Farleigh Down Bath ..	1	8	,, ,,
Beer in blocks	1	6½	,, ,,
Grinshill ,, ...	1	10	,, ,,
Brown Portland in blocks	2	2	,, ,,
Darley Dale in blocks..	2	1½	,, ,,
Red Corsehill ,,	2	5	,, ,,
Red Mansfield ,,	2	4½	,, ,,
Hard York in blocks ..	2	10	,, ,,
Hard York 6 in. sawn both sides landings, to sizes (under 40 ft. sup.)	2	8	per ft. super. at rly. depôt.
,, ,, 6 in. Rubbed Ditto..	3	0	,, ,,
,, ,, 3 in. sawn both sides slabs (random sizes)	1	3	,, ,,
,, ,, 3 in. self-faced Ditto	0	9½	,, ,,

SLATES.

in. in.	£	s.	d.	
20X10 best blue Bangor ..	11	5	0	per 1000 of 1200 at ry. dep.
,, best seconds ,,	10	25	0	,, ,,
16X 8 best ,,	6	2	6	,, ,,
20X10 best blue Portmadoc	10	18	0	,, ,,
16X 8 best blue Portmadoc	6	0	0	,, ,,
20X10 best Eureka unfading green.....	11	2	6	,, ,,
16X 8 ,, ,,	6	15	0	,, ,,
20X10 Permanent green	10	0	0	,, ,,
16X 8 ,, ,,	5	12	6	,, ,,

TILES.

	s.	d.	
Best plain red roofing tiles...	41	6	per 1,000 at rly. depôt.
Hip and valley tiles.....	3	7	per doz. ,, ,,
Best Broseley tiles	48	6	per 1,000 ,, ,,
Hip and valley tiles....	4	0	per doz. ,, ,,
Best Ruabon Red, brown or brindled Do. (Edwards)	57	6	per 1,000 ,, ,,
Do. ornamental Do.	60	0	,, ,, ,,
Hip tiles.....	4	0	per doz. ,, ,,
Valley tiles.....	3	9	,, ,, ,,
Best Red or Mottled Staffordshire Do. (Peakes).	50	9	per 1,000 ,, ,,
Hip tiles	4	1	per doz. ,, ,,
Valley tiles.....	3	8	,, ,, ,,

WOOD.

BUILDING WOOD.—YELLOW.

	At per standard. £	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	16	10	0	18	0	0
Deals: best 3 by 9	14	10	0	15	10	0
Battens: best 2½ in. by 7 in. and 8 in. and 3 in. by 7 in. and 8 in.....	12	10	0	13	10	0
Battens: best 2½ by 6 and 3 by 6 ..	0	10	0	less than 7 in. and 8 in.		
Deals: seconds	1	0	0	less than best		
Battens: seconds.....	0	10	0	,, ,,		

	At per load of 50 ft.					
Fir timber: Best middling Danzig or Memel (average specification)	4	10	0	5	0	0
Seconds	4	5	0	4	10	0
Small timber (8 in. to 10 in.)	3	12	6	3	15	0
Swedish balks.....	2	15	0	3	0	0
Pitch pine timber (35 ft. average)..	4	0	0	4	10	0

JOINERS' WOOD.

	At per standard. £	s.	d.	£	s.	d.
White Sea: First yellow deals, 3 in. by 11 in.....	27	10	0	28	10	0
3 in. by 9 in.	24	0	0	25	0	0
Battens, 2½ in. and 3 in. by 7 in.	20	0	0	21	0	0
Second yellow deals, 3 in. by 11 in.	22	10	0	24	0	0
,, ,, 3 in. by 9 in.	20	0	0	21	0	0
Battens, 2½ in. and 3 in. by 7 in.	16	10	0	18	0	0
Third yellow deals, 3 in. by 11 in. and 9 in.	16	10	0	18	0	0
Battens, 2½ in. and 3 in. by 7 in.	13	10	0	14	10	0
Petersburg: first yellow deals, 3 in. by 11 in.	25	0	0	26	0	0
Do. 3 in. by 9 in.	22	0	0	23	0	0
Battens.....	16	10	0	17	10	0
Second yellow deals, 3 in. by 11 in.....	18	10	0	20	0	0
Do. 3 in. by 9 in.	17	0	0	18	0	0
Battens.....	14	0	0	14	10	0
Third yellow deals, 3 in. by 11 in.....	15	0	0	16	10	0
Do. 3 in. by 9 in.	14	0	0	14	10	0
Battens.....	12	10	0	13	10	0
White Sea and Petersburg:— First white deals, 3 in. by 11 in..	15	10	0	16	10	0
,, ,, ,, 3 in. by 9 in. ..	14	0	0	15	0	0
Battens.....	12	10	0	13	10	0

PRICES CURRENT (*Continued*).

WOOD.

	At per standard. £	s.	d.	£	s.	d.
White Sea and Petersburg:— Second white deals 3 in. by 11 in.	14	0	0	15	0	0
,, ,, ,, 3 in. by 9 in.	13	0	0	14	0	0
,, ,, battens	11	0	0	12	0	0
Pitch pine: deals	16	0	0	18	0	0
Under 2 in. thick extra	0	10	0	1	0	0
Yellow Pine— First, regular sizes	30	0	0	33	0	0
Broads (12 in. and up)	2	0	0	more.		
Oddments	22	0	0	24	0	0
Seconds, regular sizes	24	10	0	26	10	0
Yellow Pine Oddments	20	0	0	22	0	0
Kauri Pine— Planks, per ft. cube	9	3	6	0	4	6
Danzig and Stettin Oak Logs— Large, per ft. cube	0	2	6	0	2	8
Small ,, ,, ...	0	2	4	0	2	7
Wainscot Oak Logs, per ft. cube ..	0	5	0	0	5	6
Dry Wainscot Oak, per ft. sup. as inch	0	0	8		0	9
¾ in. do. do.	0	0	7	-	-	-
Dry Mahogany— Honduras, Tabasco, per ft. sup. as inch	0	0	9	0	0	11
Selected, Figury, per ft. sup. as inch	0	1	6	0	2	0
Dry Walnut, American, per ft. sup. as inch.....	0	0	10	0	1	0
Teak, per load	16	0	0	20	0	0
American Whitewood Planks— Per ft. cube.....	0	2	3	0	3	0

JOISTS, GIRDERS, &c.

	In London, or delivered to Railway Vans, per ton. £	s.	d.	£	s.	d.
Rolled Steel Joists, ordinary sections	8	0	0	9	0	0
Compound Girders ,, ,,	9	10	0	10	15	0
Angles, Tees and Channels, ordinary sections	9	12	6	11	12	6
Flitch Plates	10	0	0	10	15	0
Cast Iron Columns and Stanchions, including ordinary patterns	8	5	0	10	0	0

METALS.

	Per ton, in London. £	s.	d.	£	s.	d.
IRON.— Common Bars.....	9	15	0	-	-	-
Staffordshire Crown Bars, good merchant quality	10	5	0	10	10	0
Staffordshire "Marked Bars" ..	12	0	0	-	-	-
Mild Steel Bars.....	10	10	0	11	0	0
Hoop Iron, basis price.....	10	10	0	11	0	0
,, ,, galvanised	16	10	0	-	-	-
(* And upwards, according to size and gauge.)						
Sheet Iron, Black.— Ordinary sizes to 20 g.	11	0	0	-	-	-
,, ,, to 24 g.	12	0	0	-	-	-
,, ,, to 26 g.	13	10	0	-	-	-
Sheet Iron, Galvanised, flat, ordinary quality.— Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.....	13	5	0	-	-	-
,, ,, 22 g. and 24 g.	14	5	0	-	-	-
,, ,, 26 g.	16	0	0	-	-	-
Sheet Iron, galvanised, flat, best quality.— Ordinary sizes to 20 g.	17	10	0	-	-	-
,, ,, 22 g. and 24 g.	18	0	0	-	-	-
,, ,, 26 g.	19	10	0	-	-	-
Galvanised Corrugated Sheets.— Ordinary sizes, 6 ft. to 8 ft. 20 g.	13	10	0	-	-	-
,, ,, 22 g. and 24 g.	14	0	0	-	-	-
Cut nails, 3 in. to 6 in..... (Under 3 in. usual trade extras.)	11	10	0	-	-	-
LEAD—Sheet, English, 3 lbs. & up.	19	5	0	-	-	-
Pipe in coils	19	15	0	-	-	-
Soil Pipe..	22	15	0	-	-	-
ZINC—Sheet— Vieill6 Montagne ..... ton	26	0	0	-	-	-
Silesian.....	25	10	0	-	-	-
COPPER— Strong Sheet..... per lb.	0	1	1	-	-	-
Thin ..... ,,	0	1	3	-	-	-
Copper nails ..... ,,	0	1	3	-	-	-
BRASS— Strong Sheet..... ,,	0	0	11	-	-	-
Thin ,, ... ,,	0	1	1	-	-	-
TIN—English Ingots ..... ,,	0	1	4½	-	-	-
SOLDER—Plumbers' ..... ,,	0	0	9	-	-	-
Tinmen's ..... ,,	0	0	9½	-	-	-
Blowpipe ..... ,,	0	0	10½	-	-	-

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d.	per ft. delivered.
,, fourths	2¾d.	,, ,,
21 oz. thirds	3½d.	,, ,,
,, ,, fourths.....	3d.	,, ,,
26 oz. thirds	4¼d.	,, ,,
,, ,, fourths	4d.	,, ,,
32 oz. thirds	5¼d.	,, ,,
,, ,, fourths	5d.	,, ,,
Fluted sheet, 15 oz.	3¼d.	,, ,,
,, ,, 21 ,, ...	4¼d.	,, ,,
½ Hartley's Rolled Plate..	3d.	,, ,,
⅜ ,, ,, ,, ...	3½d.	,, ,,
¼ ,, ,, ,, ...	4d.	,, ,,

OILS, &c.

		£	s.	d.
Raw Linseed Oil in pipes.....	per gallon	0	2	10
,, ,, ,, in barrels	,,	0	2	11
,, ,, ,, in drums	,,	0	3	1
Boiled ,, ,, in pipes.....	,,	0	3	1
,, ,, ,, in barrels	,,	0	3	2
,, ,, ,, in drums	,,	0	3	4
Turpentine, in barrels	,,	0	2	8
,, in drums.....	,,	0	2	10
Genuine Ground English White Lead ...per ton		27	0	0
Red Lead, Dry.....	,,	24	10	0
Best Linseed Oil Putty.....per cwt.		0	9	0
ockholm Tar ..... per barrel		1	10	0

PRICES CURRENT (*Continued*).

VARNISHES, &c.

	per gallon £	s.	d.
Fine Elastic Copal Varnish for outside work ..	0	16	6
Best Elastic Copal Varnish for outside work ..	1	0	0
Best Elastic Carriage Varnish for outside work	0	16	6
Best Hard Oak Varnish for inside work	0	10	6
Best Extra Hard Church Oak Varnish for inside work	0	10	6
Fine Hard Copal Varnish for inside work	0	16	0
Best Hard Copal Varnish for inside work	1	0	0
Best Hard Carriage Varnish for inside work....	0	16	0
Extra Pale Paper Varnish	0	12	0
Best Japan Gold Size	0	10	0
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	9	0
Berlin Black	0	15	0
Knotting	0	10	0
Best French and Brush Polish	0	10	0

TO CORRESPONDENTS.

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Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

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TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays.* N.B.—We cannot publish tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of tenders accepted unless the amount of the tender is given, nor any list in which the lowest tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

DOVER.—For additions to boiler-house, &c., drainage works, Strond-lane, for the Town Council. Mr. H. E. Stilgoe, C.E., Town Hall, Dover:—

W. Stokes.....	£714 19 1	M. Warrington	£593 4 0
W. H. Grigg ..	672 0 0	Austen & Lewis	579 3 0
D. & G. Rider..	630 19 3	Geo. Munro, Dover*	559 0 0
Brisley & Co. ..	624 1 3		

EXETER.—For the formation of cricket ground, including draining, road works, fencing, &c. Messrs. Ellis, Son, & Bowden, surveyors, Exeter. Quantities by surveyors:—

A. N. Coles	£7,916 !	Grounds & Newton	£5,607
R. H. B. Neal.....	6,999	Lapthorn & Co.	5,540
Pomeroy	6,788	G. Setter	5,338
S. Saunders	5,820	E. Mudge	4,921
W. Gibson.....	5,760	E. Harris, Clysthidon, Exeter*	4,600.!
Wakeham Bros.	5,732		

HARROGATE.—For private street improvements. Mr. F. Bagshaw, Borough Engineer:—

Park-avenue.

B. Oxley, Stonefall Farm, Starbeck, Harrogate*.....£1,404 4 0

Back Road off Union-street.

R. W. Barker, Church-square, Harrogate*.....£64 8 10

HARROGATE.—For stables and cottage on the Corporation Farm. Mr. F. Bagshaw, Borough Engineer:—

Masonry, &c.—Barker Bros., Hampsthwaite*.....£977 10 0
Joinery.—G. H. Carrick, Church-square, Harrogate*..... 350 0 0
Plastering.—J. Tyson, Tower-street, Harrogate*..... 54 10 0
Plumbing.—C. Allen, Harrogate*.... 95 0 0
Slating.—Baynes & Son, Harrogate* 147 13 0

HARROGATE.—For widening Bower-road. Mr. F. Bagshaw, Borough Engineer:—

James Frost*.....£798 8 5

HARROW.—For the erection of a house at Kenton-road, for Mrs. Enderby. Messrs. Clarke & Charles, architects, Peterborough-road, Harrow:—

F. T. Chinchen	£2,140	J. & J. Bailey	£1,900
Roome & Co.	2,100	Webster & Cannon	1,898
J. S. Kimberley	2,015	C. Simmons, Willesden*	1,820
Thomas Turner, Ltd.	1,987		

HARROW.—For the erection of a house at Lyon-road, for Mr. H. R. Matthews. Messrs. Clarke & Charles, architects, Peterborough-road, Harrow:—

G. & J. Waterman..	£3,884	J. S. Kimberley	£3,780
Roome & Co.	3,805	T. Turner, Ltd.†, ..	3,570

[*See also next page.*

HORLEY (Surrey).—For alterations to the Chequers Hotel, Horley, for Mr. A. Brandt. Mr. E. Blundell, architect :—

Thomas Wickens* £1,530

HORNCHURCH (Essex).—For the erection of bungalow-residence, Parkstone-avenue, on the Emerson Park Estate, Hornchurch, Essex, for Mr. Laurence B. Wilson. Mr. D. Taylor, architect and surveyor, Station-avenue, Winchmore Hill, N. :—

J. R. Jackson	£750	Wm. Goddard, jun., New Southgate*	£725

[Surveyor's estimate, £717 11s.]

KINSON (Dorset).—For the erection of schools and additions, Kinson Heath, for the School Board. Mr. Walter Andrew, architect, Alton Office, Parkstone. Quantities by Messrs. Jennings & Goater, Bournemouth :—

Jones & Leward	£3,067 0 0	J. Challis	£2,710 5 9
Jenkins & Son	2,983 0 0	Baker & Pearcey	2,670 7 9
Whitaker	2,938 0 0	T. C. Rigler	2,592 18 2
A. & F. Wilson	2,913 2 1	Huxtable, Bournemouth*	2,278 10 0
G. Crabb	2,733 14 9		
W. J. Cross	2,730 18 2		

LITHERLAND (Lancs).—For sewer and roadmaking, Field-lane, for the Urban District Council. Mr. W. B. Garton, C.E., 25, Sefton-road, Litherland :—

W. F. Chadwick	£3,559 11 1
Thomas Rowlands	3,114 4 0
Joseph Joynson, Walton, Liverpool*	2,855 7 0
Peter Tyson	2,849 6 2

LLANDILO.—For building a church at Maesteilo (exclusive of foundations), for the Misses Mansels and the Building Committee. Mr. David Jenkins, architect :—

Thomas Brothers* £1,815

LONDON.—For artisans' dwellings, Phœnix-street, St. Pancras, N.W., for the directors of Hampden House, Limited. Messrs. Salter, Issott, & Salter, architects, Phœnix-street, N.W. Quantities by Mr. A. R. Henderson, surveyor, 47, Pall Mall, S.W. :—

Marchant & Hirst	£2,439	Patman & Fotheringham	£2,180
Vears & Co.	2,359	T. E. Mitchel	2,138
W. Wallis	2,308	T. G. Sharpington	2,119
W. S. Beaton	2,300	Brown & Son, Wellingboro'*	2,100
Wilkinson Bros.	2,215		

LONDON.—For electric light wiring and fittings for the Fulham Parish Receiving School, 9, Parsons-green, S.W., for the Guardians of Fulham Parish. Mr. A. Saxon Snell, architect. Quantities by Messrs. Dolby & Williamson, consulting engineers :—

	In Simplex Tubing.	In Wood Casing.
Tyler & Duncan	£333 17 3	£309 8 4
T. L. Hellyar	332 8 0	302 12 5
Wells & Co.	326 0 0	297 19 6
National Electric Wiring Co.	289 0 0	212 5 0
H. F. Joel & Co.	270 0 0	252 0 0
Alwyn & Craven	240 3 6	229 6 0
Barlow Bros. & Co.	235 0 0	187 0 0
Walter C. Scott	231 4 2	207 14 5
F. J. Coleby	220 15 0	205 5 0
Pinching & Walton	212 5 0	180 7 0
J. W. Manley & Co., Limited	199 12 5	136 1 8
W. J. Fryer & Co.	199 0 0	175 0 0
Cecil Cooper & Co., Fulham-road, S.W.*	185 7 6	179 5 0

ORSETT (Essex).—For the reconstruction of drainage at Orsett Union, for the Guardians of the Poor. Mr. Christopher M. Shiner, architect, 3, Bond-court, E.C. :—

Cooke* £105 2 9

WALTHAMSTOW.—For the erection of a villa residence at Walthamstow for Mr. W. Bach. Mr. F. Towl, architect, Walthamstow :—

Barton	£1,241	Carter	£1,100
Goodhall	1,198	Reed, Walthamstow*	1,095
Rawlins	1,190		

WALTON-ON-NAZE.—For main sewerage and sewage disposal work for the Walton Urban District Council. Messrs. Beesley, Son, & Nichols, engineers, 11, Victoria-street, Westminster :—

G. Double	£14,763 5 0	Cooke & Co.	10,329 0 0
J. W. Ransome	12,980 0 0	J. Young	10,130 0 0
Johnson & Co.	12,700 0 0	Burgoyne & Sons	9,614 8 6
Johnson Bros.	12,200 0 0	Mackenzie & Sons	9,410 0 0
C. J. Ford	11,981 0 0	E. West	9,300 0 0
G. Bell	11,090 0 0	Parry & Co.	9,270 0 0
J. Jackson	10,770 0 0	J. Moran & Son, Harwich*	8,950 0 0
Wilkinson Bros.	10,720 0 0		

WOOLSTON (Southampton).—For new Liberal Club, Victoria-road, Woolston. Mr. John H. Blizard, architect (Lemon & Blizard) :—

Bagshaw & Son	£1,587	Hinton Bros., Woolston*	£1,250
F. Chalk	1,540		
C. Daysh	1,339		

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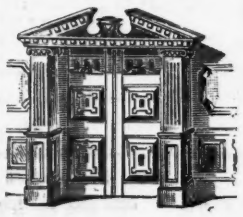

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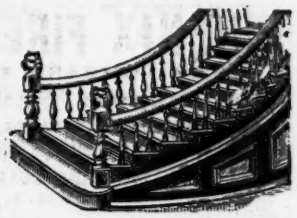

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Refer also to "TOO LATE" *column page* xxii.

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Written applications, stating age, present occupation (if any), and past experience must be forwarded, together with copies of not more than three testimonials, in envelopes endorsed "Assistant Surveyor," to M. W. JAMESON, Esq. the Borough Engineer, Great Alie-street, E. on or before TWELVE noon on WEDNESDAY, the 30th JANUARY, 1901.
Selected candidates will be required to produce their original testimonials.
Canvassing will disqualify any applicant.
G. W. CLARKE, Town Clerk.
Municipal Offices, No. 25, Great Alie-street, E.
January 15th, 1901.

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W. H. FOX, Borough Engineer.
Town Hall, Barrow-in-Furness, January 16th, 1901.

THE HACKNEY BOROUGH COUNCIL
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The Council REQUIRE the SERVICES of a DRAUGHTSMAN who must be competent to take surveys and levels, and prepare accurate plans and sections for new roads, street improvements, and other similar works.
Preference will be given to candidates who have had experience in the preparation of estimates and apportionments for new road and paving works.
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By order, GEORGE GROCOTT, Acting Town Clerk.

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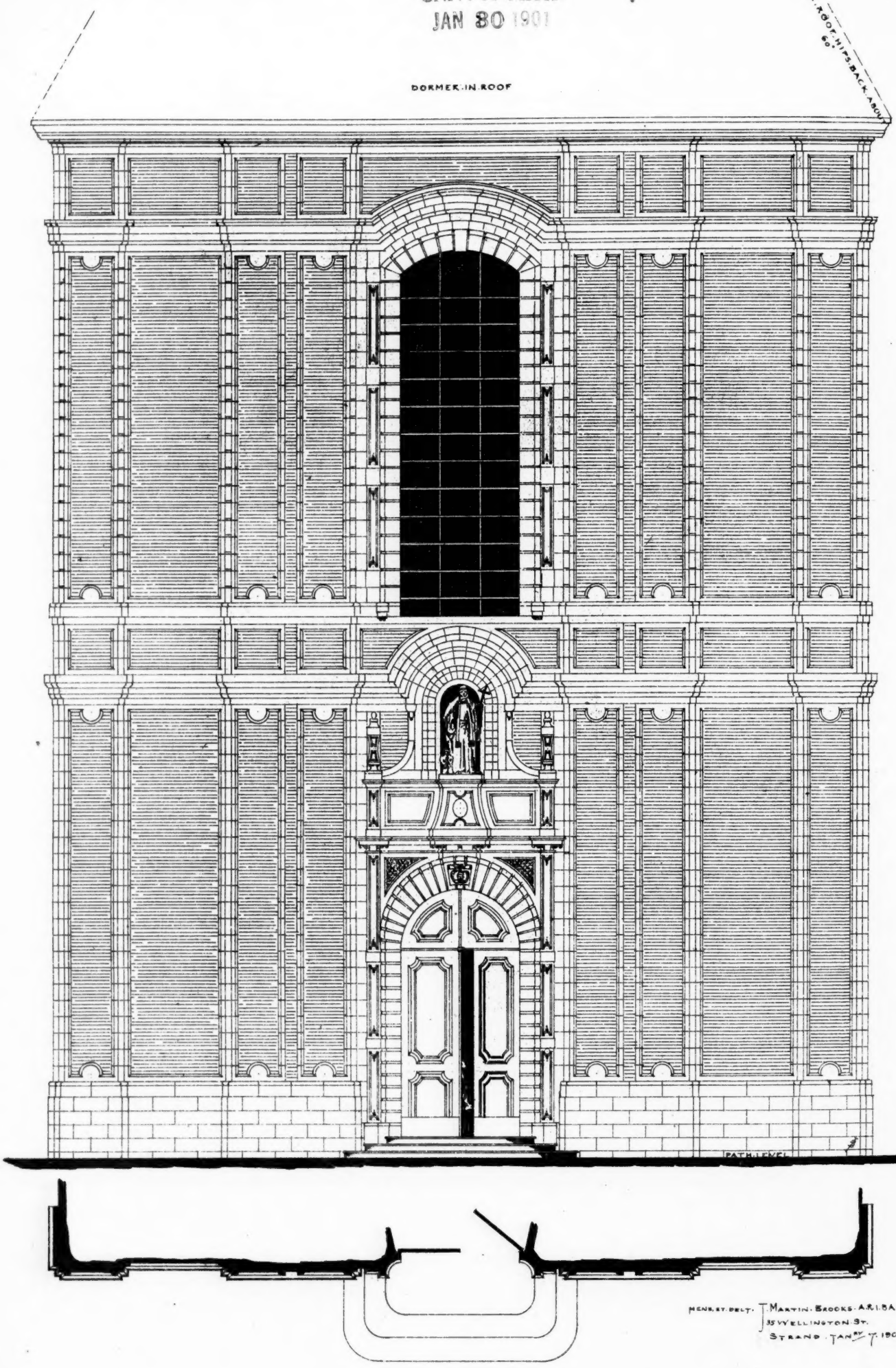

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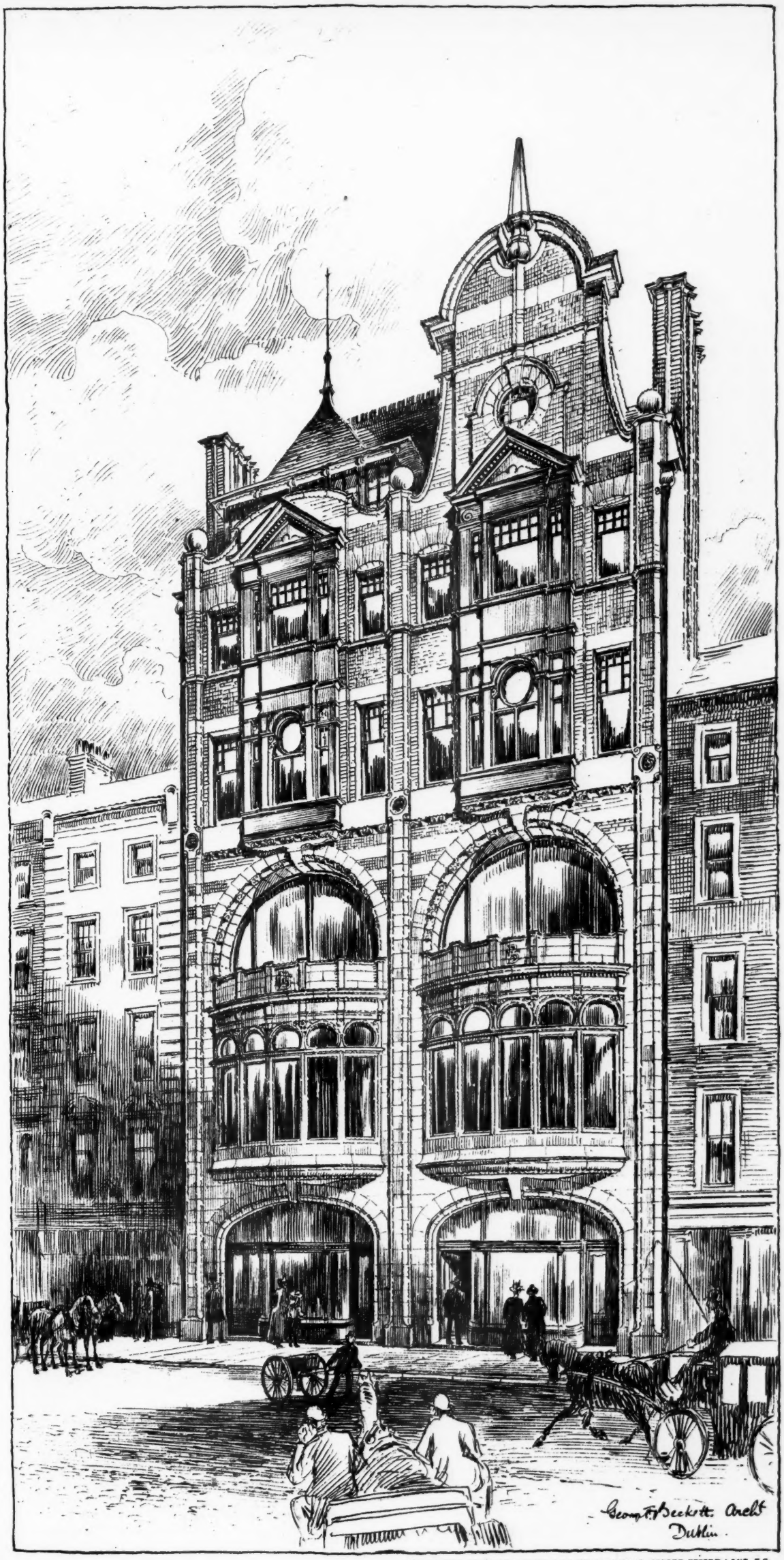

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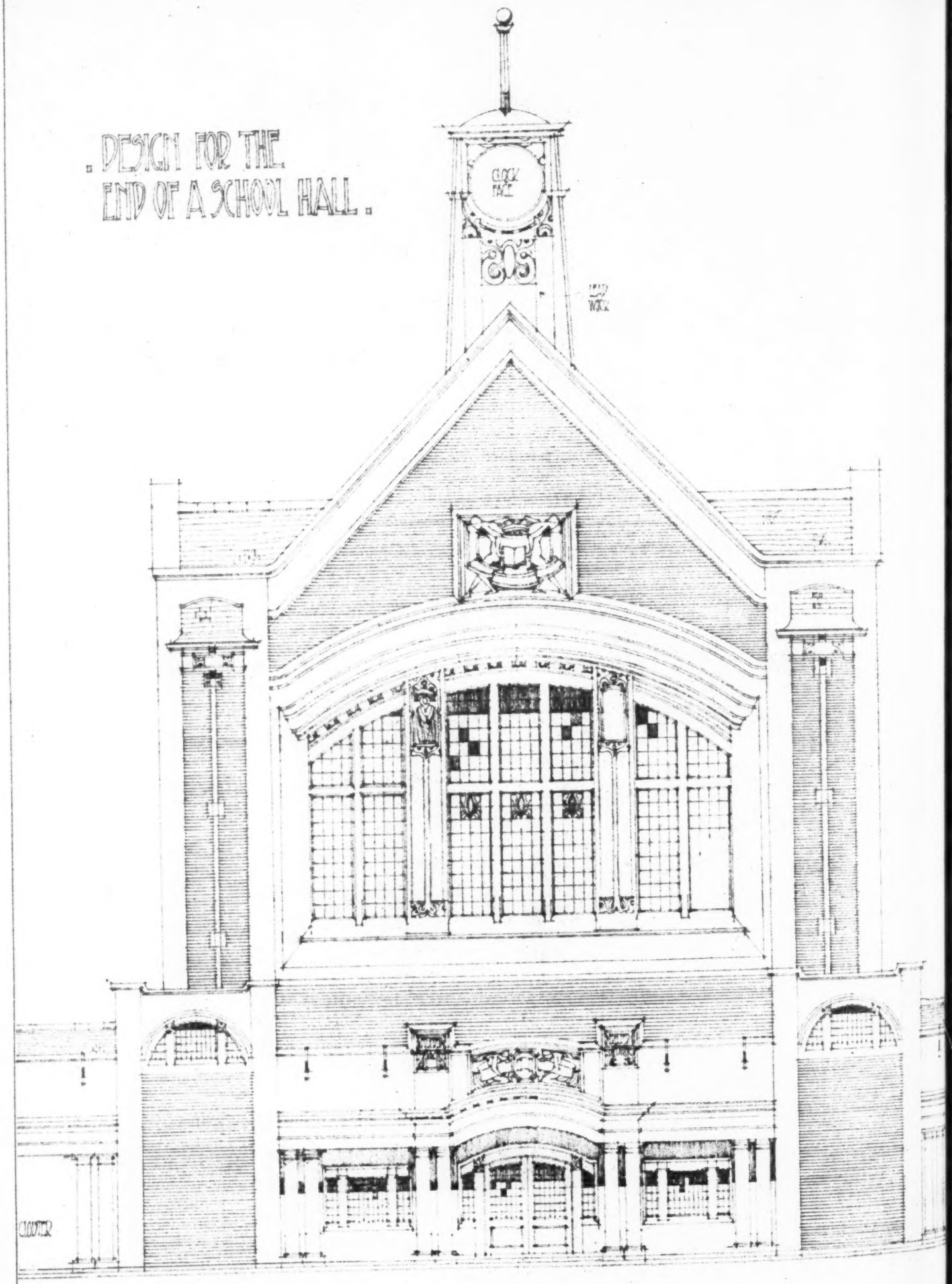

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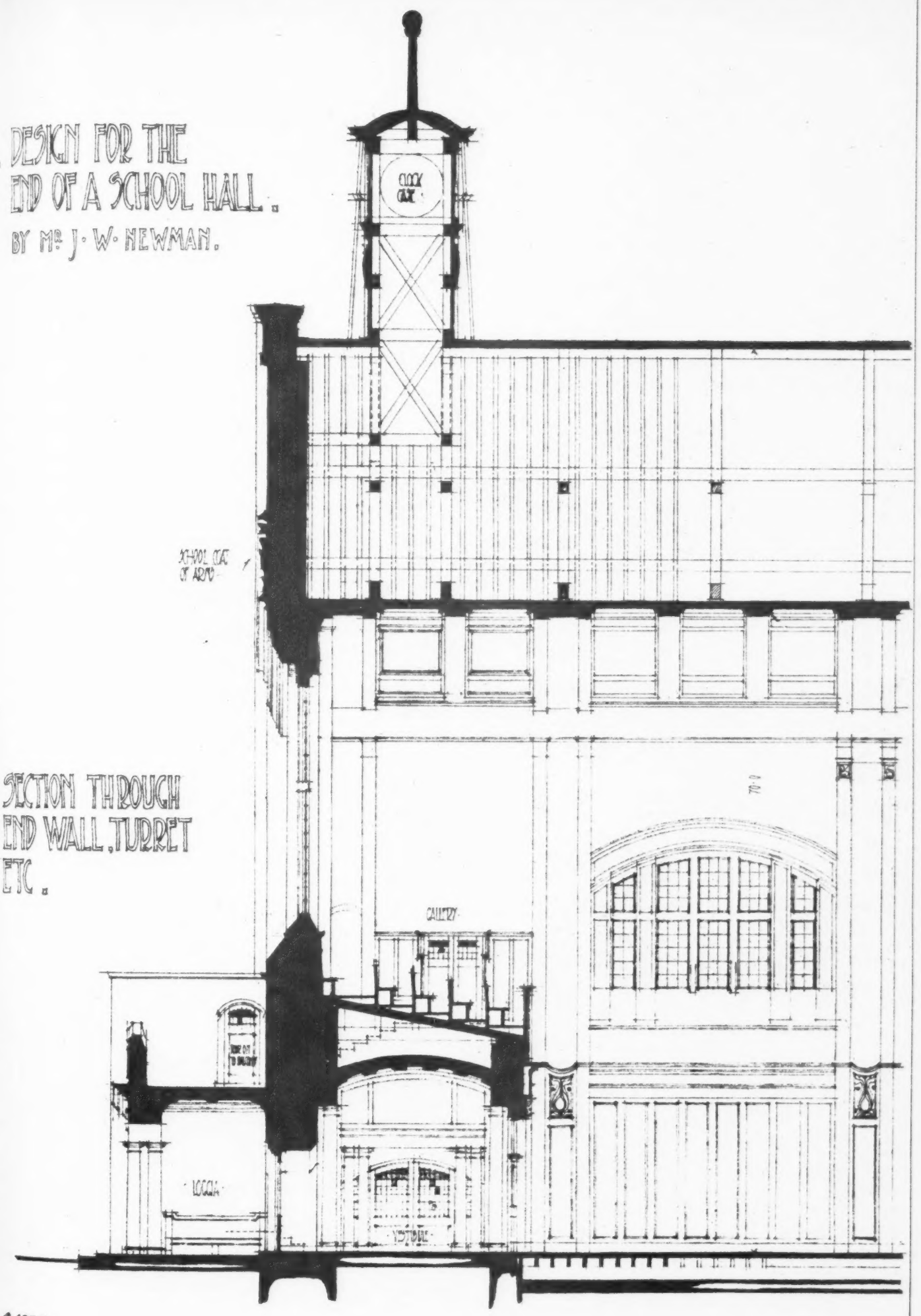

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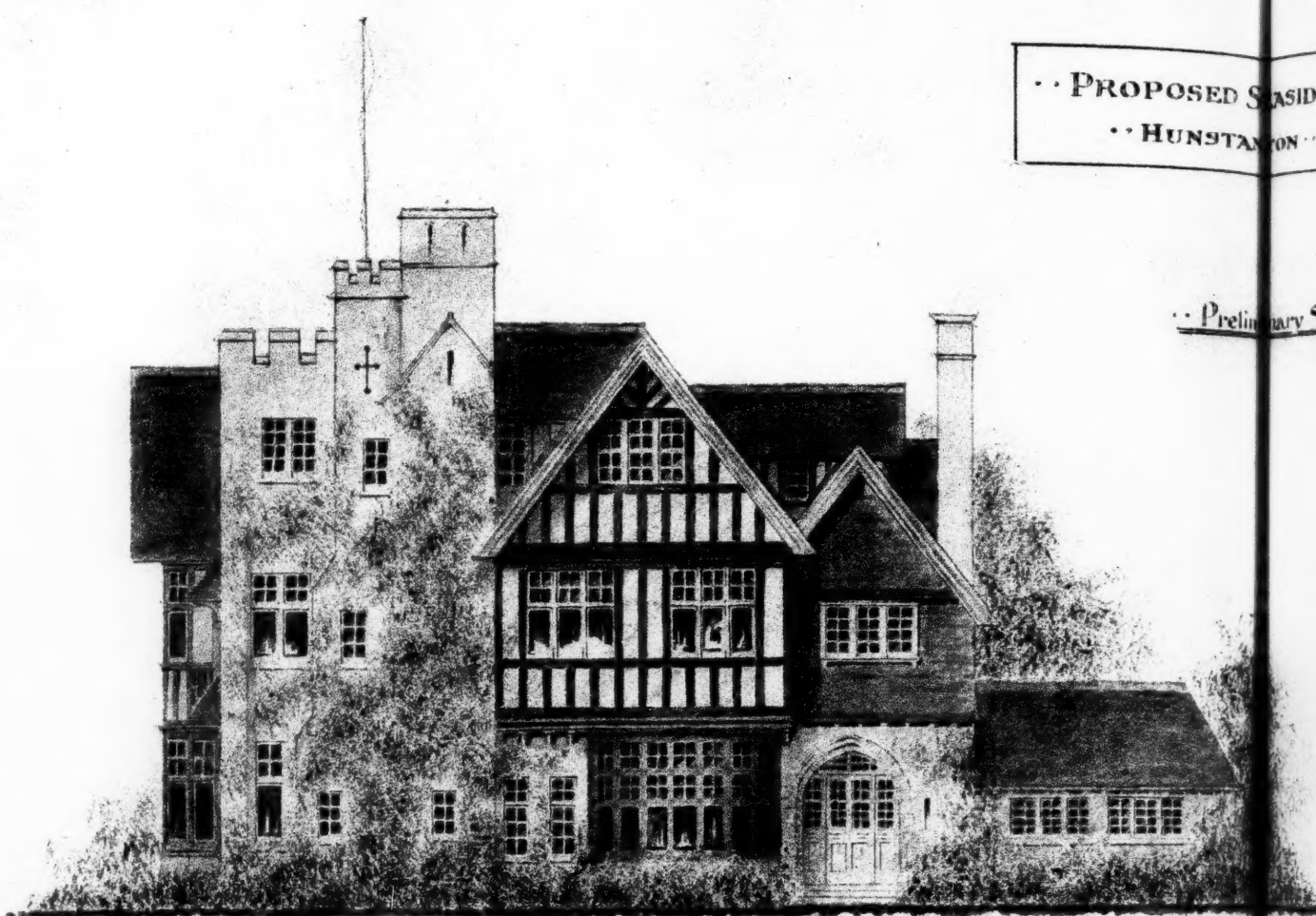

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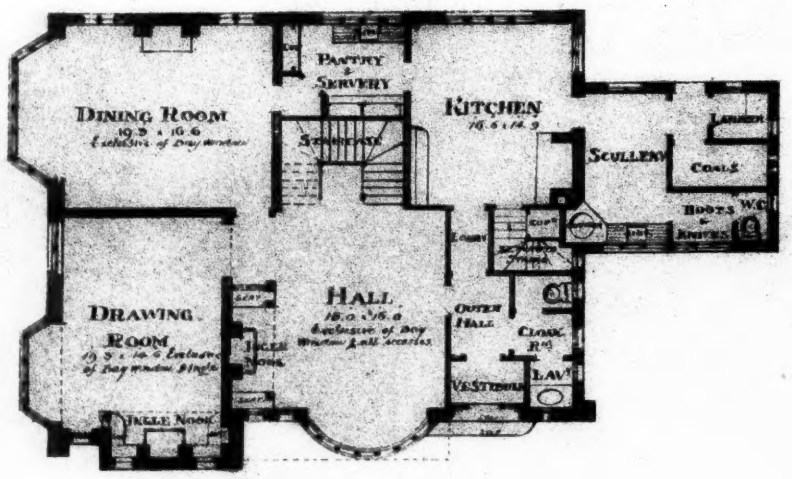

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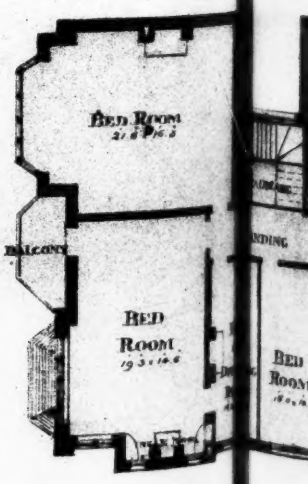

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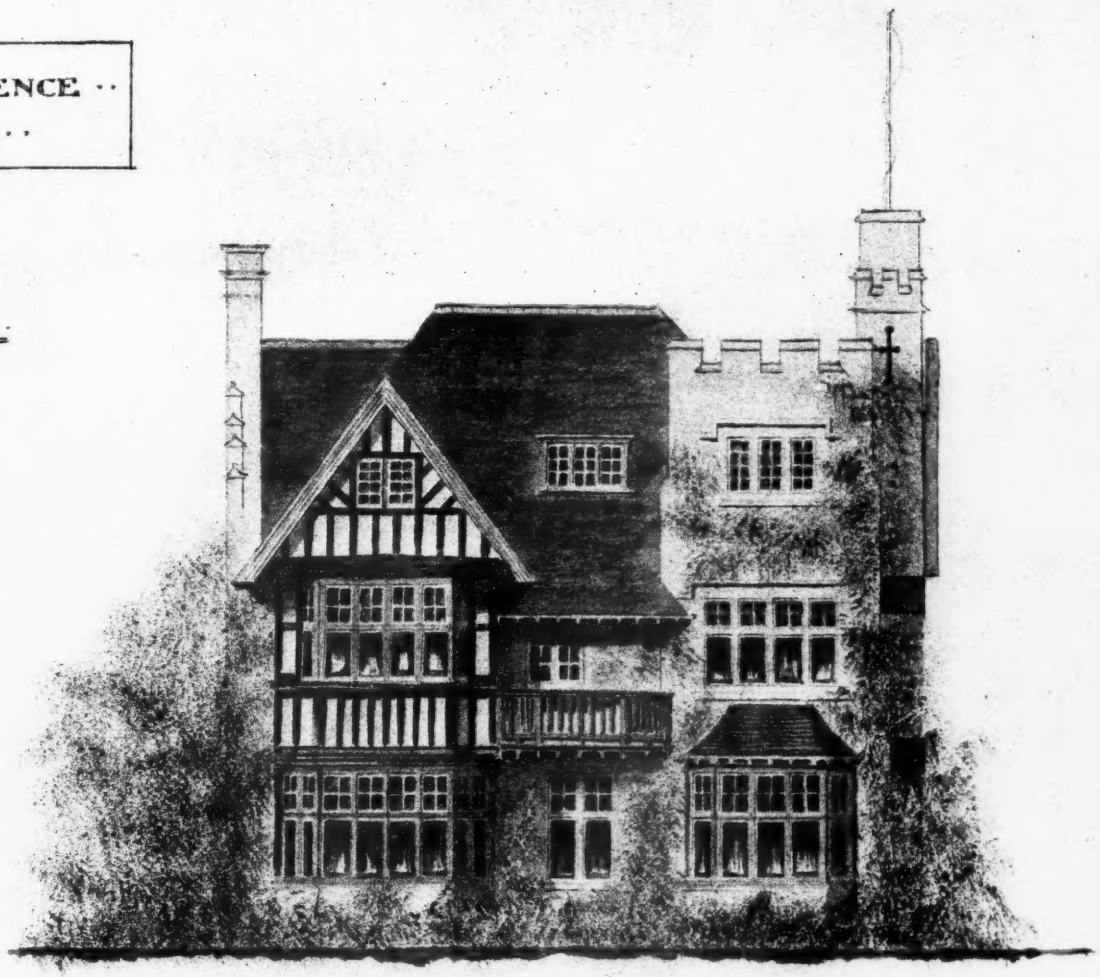

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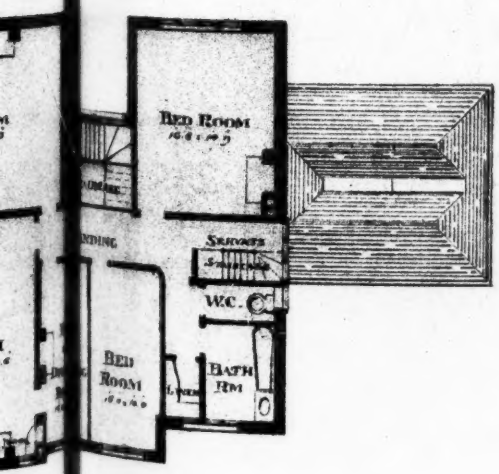

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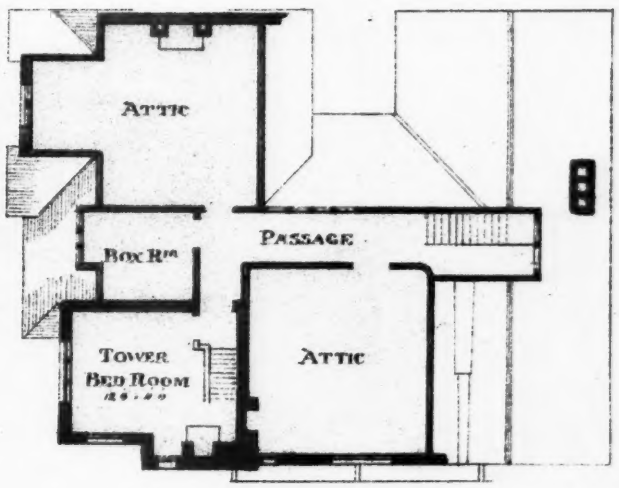

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